



KANSAS CITY AREA TRANSPORTATION AUTHORITY WITH CITY OF KANSAS CITY, MISSOURI KANSAS CITY STREETCAR AUTHORITY PORT AUTHORITY OF KANSAS CITY, MO



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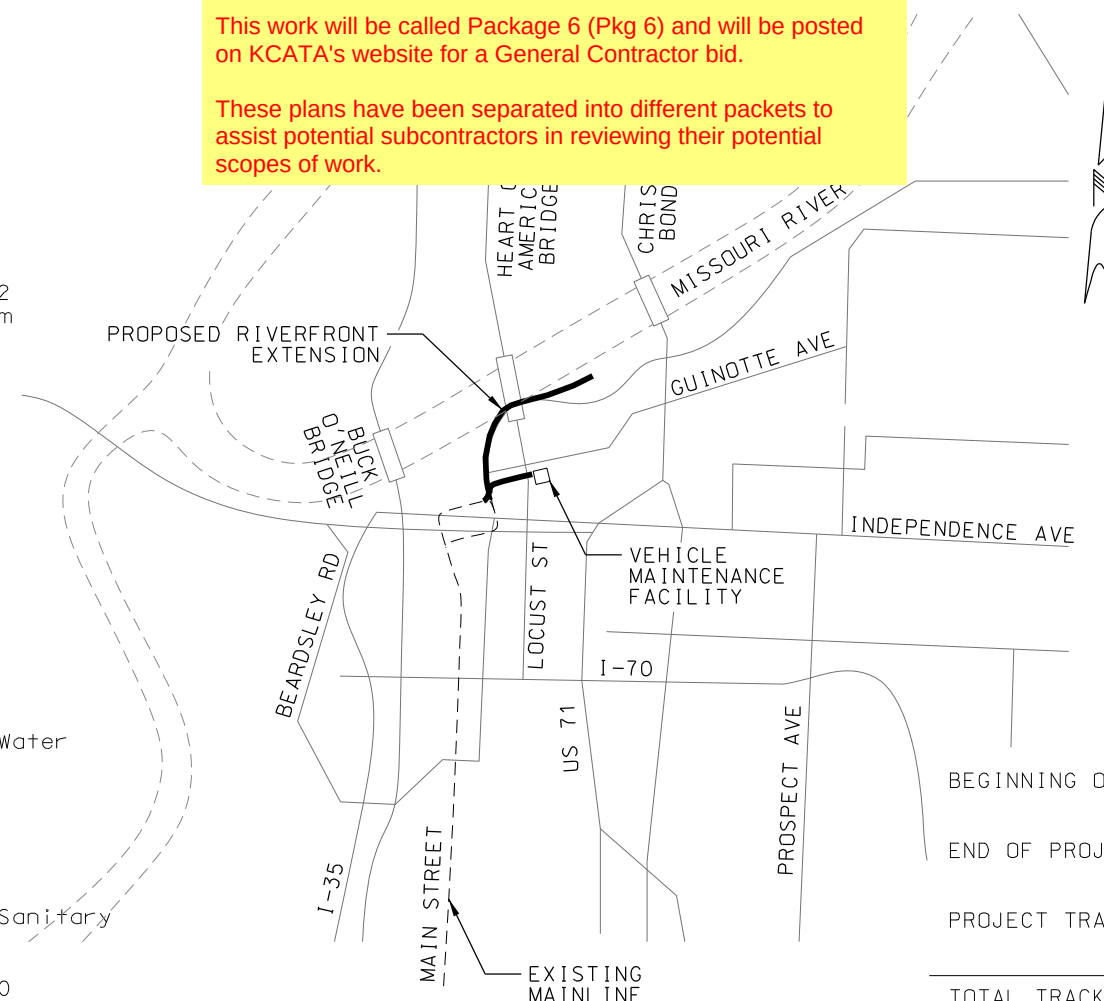
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KANSAS CITY STREETCAR RIVERFRONT EXTENSION FTA FAIN # MO-2022-002-00 KCATA PROJECT No.: 2021-SC-3P01 KCMO PROJECT No.: 89022015 ISSUED FOR BID DECEMBER 2022 (T49N, R33W)

https://www.kcata.org/about_kcata/entries/current_opportunities

This work will be called Package 6 (Pkg 6) and will be posted on KCATA's website for a General Contractor bid.

These plans have been separated into different packets to assist potential subcontractors in reviewing their potential scopes of work.



APPROVED BY

KCATA PROJECT MANAGER

KCATA CHIEF ENGINEER

KCMO DIRECTOR OF TRANSPORTATION

KCMO CITY ENGINEER

KCMO DIRECTOR OF PUBLIC WORKS

KANSAS CITY STREETCAR AUTHORITY

PORT AUTHORITY OF KANSAS CITY, MISSOURI
(PORT KC)

ENTRY NO.

C.D. NO. 4

LENGTH OF PROJECT	
BEGINNING OF PROJECT	STA 113+00.00 NB MAINLINE
	STA 199+89.24 SB MAINLINE
END OF PROJECT	STA 150+82.51 NB MAINLINE
	STA 236+48.29 SB MAINLINE
PROJECT TRACK LENGTH	3,783 TF NB
	3,659 TF SB
TOTAL TRACK LENGTH	7,442 TF (1.4 MILES)



10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

This set of plans is
not for
construction.
These plans are
intended to build
interest in bidding
the project.

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: G001.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.: G001	SHEET NO.: 1

#	dwg	TITLE	DESCRIPTION	#	dwg	TITLE	DESCRIPTION
GENERAL SHEETS							
1	G001	TITLE SHEET AND LOCATION MAP		60	K304A	SOUTHBOUND 115RE TRACK PROFILE	SB STA 211+00 TO STA 215+00
2	G010	INDEX OF DRAWINGS	SHEET 1	61	K305	NORTHBOUND 115RE TRACK PLAN AND PROFILE	NB STA 125+00 TO STA 129+00
3	G011	INDEX OF DRAWINGS	SHEET 2	62	K305A	SOUTHBOUND 115RE TRACK PROFILE	SB STA 215+00 TO STA 219+00
4	G012	INDEX OF DRAWINGS	SHEET 3	63	K306	NORTHBOUND 115RE TRACK PLAN AND PROFILE	NB STA 129+00 TO STA 133+00
5	G013	INDEX OF DRAWINGS	SHEET 4	64	K306A	SOUTHBOUND 115RE TRACK PROFILE	SB STA 219+00 TO STA 223+00
6	G030	STANDARD ABBREVIATIONS	SHEET 1 OF 2	TRACK DETAILS			
7	G031	STANDARD ABBREVIATIONS	SHEET 2 OF 2	65	K901	TRACK SLAB DETAILS	DETAIL SHEET 1 OF 5
8	G032	DCS GENERAL SYMBOLS AND ABBREVIATIONS		66	K902	TRACK SLAB DETAILS	DETAIL SHEET 2 OF 5
9	G035	STANDARD SYMBOLS		67	K903	TRACK SLAB DETAILS	DETAIL SHEET 3 OF 5
10	G036	TRACTION POWER SYMBOLS		68	K904	TRACK SLAB DETAILS	DETAIL SHEET 4 OF 5
11	G037	TRACTION POWER ABBREVIATIONS		69	K905	TRACK SLAB DETAILS	DETAIL SHEET 5 OF 5
12	G038	SYSTEMWIDE ELECTRICAL ABBREVIATIONS AND SYMBOLS		70	K906	115 RE AND 112 TRAM RAIL SECTIONS	
13	G040	GENERAL NOTES		71	K907	TRANSITION RAIL	
14	G041	DCS GENERAL NOTES		72	K908	25M/25M EQUILATERAL CONTINUOUSLY CURVED FROG TURNOUT	
15	G042	DCS STRUCTURAL STEEL AND CONCRET NOTES		73	K909	25M CONTINUOUSLY CURVED FROG TURNOUT	
16	G043	TRACTION POWER GENERAL NOTES		74	K910	25M CONTINUOUSLY CURVED FROG TURNOUT	
SURVEY CONTROL				75	K911	25M STRAIGHT FROG TURNOUT	
17	SV001	SURVEY CONTROL	SHEET 1 OF 2	76	K912	TURNOUT ENCAPSULATION AND SECTION DETAILS	
18	SV002	SURVEY CONTROL	SHEET 2 OF 2	77	K913	MANHOLE REBAR DETAIL	DETAIL SHEET 1 OF 2
DEMOLITION PLANS				78	K914	MANHOLE REBAR DETAIL	DETAIL SHEET 2 OF 2
19	C501	DEMOLITION PLAN	NB STA BEGIN TO STA 113+00	79	K915	TRACK DRAIN DETAILS	
20	C502	DEMOLITION PLAN	NB STA 113+00 TO STA 117+92	80	K916	HORIZONTAL PRECURVED RAIL LOCATION MAP	
21	C503	DEMOLITION PLAN	NB STA 117+92 TO STA 121+00	81	K917	HORIZONTAL PRECURVED RAIL DETAILS	
22	C504	DEMOLITION PLAN	NB STA 121+00 TO STA 125+00	82	K918	RESTRAINING RAIL	
23	C505	DEMOLITION PLAN	NB STA 125+00 TO STA 129+00	83	K919	INSULATED JOINT 115 RE RAIL	
24	C506	DEMOLITION PLAN	NB STA 129+00 TO STA 133+00	84	K920	TRACK SLAB JOINTS	
25	C507	DEMOLITION PLAN	NB STA 133+00 TO STA 135+50	85	K921	END OF LINE CURB STOP	
26	C508	DEMOLITION PLAN	NB STA 135+50 TO STA 139+50	86	K922	TRACK SLAB INFILL GRADING DETAIL	
27	C509	DEMOLITION PLAN	NB STA 139+50 TO STA 143+50	87	K923	112 TRAM RAIL EXPANSION JOINTS	
28	C510	DEMOLITION PLAN	NB STA 143+50 TO STA 147+50	88	K923A	115 RE RAIL EXPANSION JOINTS	
29	C511	DEMOLITION PLAN	NB STA 147+50 TO END	89	K924	NO. 4 STRAIGHT FROG CROSSOVER	
30	C512	DEMOLITION PLAN	2ND STREET TO VMF	CIVIL DETAILS			
TRACK PLAN AND PROFILES				90	C001	TYPICAL SECTIONS 1	
31	K001	TRACK KEY MAP		91	C002	TYPICAL SECTIONS 2	
32	K101	NORTHBOUND TRACK PLAN AND PROFILE	NB STA BEGIN TO STA 113+50	92	C003	TYPICAL SECTIONS 3	
33	K101A	EXISTING TRACK TIE-IN PROFILE STA -1+00 TO STA 2+50	SB TRACK PROFILE STA 199+00 TO STA 203+00	93	C004	TYPICAL DRIVEWAY DETAILS	
34	K102	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 113+50 TO STA 117+00	94	C005	TYPICAL CURB DETAILS	
35	K102A	VMF LEAD PROFILE STA -0+50 TO STA 3+00	SB TRACK PROFILE STA 203+00 TO STA 207+00	95	C006	MISCELLANEDUS CIVIL DETAILS	
36	K103	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 117+00 TO STA 121+00	CIVIL PLANS			
37	K103A	SOUTHBOUND TRACK PROFILE	SB STA 207+00 TO STA 211+00	96	C101	CIVIL PLAN	NB STA BEGIN TO STA 113+00
38	K104	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 121+00 TO STA 125+00	97	C102	CIVIL PLAN	NB STA 113+00 TO STA 117+00
39	K104A	SOUTHBOUND TRACK PROFILE	SB STA 211+00 TO STA 215+00	98	C103	CIVIL PLAN	NB STA 117+00 TO STA 121+00
40	K105	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 125+00 TO STA 129+00	99	C104	CIVIL PLAN	NB STA 121+00 TO STA 125+00
41	K105A	SOUTHBOUND TRACK PROFILE	SB STA 215+00 TO STA 219+00	100	C105	CIVIL PLAN	NB STA 125+00 TO STA 129+00
42	K106	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 129+00 TO STA 133+00	101	C106	CIVIL PLAN	NB STA 129+00 TO STA 133+00
43	K106A	SOUTHBOUND TRACK PROFILE	SB STA 219+00 TO STA 223+00	102	C107	CIVIL PLAN	NB STA 133+00 TO STA 135+50
44	K107	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 133+00 TO STA 135+50	103	C108	CIVIL PLAN	NB STA 135+50 TO STA 139+50
45	K107A	SOUTHBOUND TRACK PROFILE	SB STA 223+00 TO STA 225+50	104	C109	CIVIL PLAN	NB STA 139+50 TO STA 143+50
46	K108	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 135+50 TO STA 139+50	105	C110	CIVIL PLAN	NB STA 143+50 TO STA 147+50
47	K108A	SOUTHBOUND TRACK PROFILE	SB STA 225+50 TO STA 229+50	106	C111	CIVIL PLAN	NB STA 147+50 TO END
48	K109	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 139+50 TO STA 143+50	107	C112	CIVIL PLAN	2ND STREET TO VMF
49	K109A	SOUTHBOUND TRACK PROFILE	SB STA 229+50 TO STA 233+50	STREETCAR STOP DETAILS			
50	K110	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 143+50 TO STA 147+50	108	C201	STREETCAR STOP	NB "RIVER MARKET NORTH"
51	K110A	SOUTHBOUND TRACK PROFILE	SB STA 233+50 TO STA 237+50	109	C202	STREETCAR STOP	NB/SB "RIVERFRONT"
52	K111	NORTHBOUND TRACK PLAN AND PROFILE	NB STA 147+50 TO STA 150+83	ADA PLANS			
53	K112	NORTHBOUND TRACK PLAN AND PROFILE	2ND STREET TO VMF	110	C301	ADA CURB RAMPS LAYOUT PLAN	RAMP NOTES AND DETAILS
54	K113	NORTHBOUND TRACK PLAN AND PROFILE	2ND STREET TO VMF	111	C302	ADA CURB RAMP STANDARD DETAILS	SHEET 1 OF 2
TRACK ALIGNMENT TABLES				112	C303	ADA RAMP STANDARD DETAILS	SHEET 2 OF 2
55	K200	TRACK ALIGNMENT TABULATION		113	C304	3RD STREET AND GRAND BOULEVARD	GRADING PLAN
56	K201	TRACK ALIGNMENT TABULATION		114	C305	2ND STREET AND GRAND BOULEVARD	GRADING PLAN
TRACK PLANS 115RE				115	C306	GRADING LAYOUT PLANS	2ND STREET TO VMF
57	K303	NORTHBOUND 115RE TRACK PLAN AND PROFILE	NB STA 117+00 TO STA 121+00	116	C307	GRADING LAYOUT PLANS	
58	K303A	SOUTHBOUND 115RE TRACK PROFILE	SB STA 207+00 TO STA 211+00	117	C308	GRADING LAYOUT PLANS	
59	K304	NORTHBOUND 115RE TRACK PLAN AND PROFILE	NB STA 121+00 TO STA 125+00	118	C309	GRADING LAYOUT PLANS	
				119	C310	GRADING LAYOUT PLANS	

REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: G010.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1	INDEX OF DRAWINGS SHEET 1	DRAWING NO.: G010	SHEET NO.: 2
			CHECKED BY	JWR									
			DRAWN BY	MMO									
			CHECKED BY	JWR									
			APPROVED BY	NKS									
PLOT DATE: \$DATE\$			\$TIME\$		DATE	12-23-2022	10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		NOT FOR CONSTRUCTION				

#	dwg	TITLE	DESCRIPTION	#	dwg	TITLE	DESCRIPTION
120	C311	GRADING LAYOUT PLANS		181	P310	"TYPE B" SHELTER	PLANS AND ELEVATIONS
121	C312	GRADING LAYOUT PLANS		182	P311	"TYPE B" SHELTER	SHELTER ROOF PLAN AND RCP
122	C313	GRADING LAYOUT PLANS		183	P312	"TYPE B" SHELTER	SHELTER ENLARGED PLANS
123	C314	GRADING LAYOUT PLANS		184	P313	"TYPE B" SHELTER	ENLARGED ELEVATION AND SECTION
124	C315	POINT TABLES		185	P361	SHELTER DETAILS	
125	C316	POINT TABLES		186	P362	SHELTER DETAILS	
TPSS PLANS				187	P363	"TYPE B" SHELTER DETAILS	ADD ALTERNATE
126	C401	TRACTION POWER SUBSTATION (TPSS)	RIVERFRONT GRADING PLAN	188	P371	MARKER SECTION AND DETAILS	
127	C402	TRACTION POWER SUBSTATION (TPSS)	RIVERFRONT DUCTBANK PLAN	189	P372	MARKER SECTION AND DETAILS	
128	C403	TRACTION POWER SUBSTATION (TPSS)	RIVERFRONT DUCTBANK PRDFILE 1	190	P380	ELECTRICAL LIGHTING PLANS AND FIXTURE SCHEDULE	
129	C404	TRACTION POWER AND SCADA SYSTEM	TYPICAL DUCTBANK SECTIONS	191	P401	PLATFORM ITS AND ELECTRICAL GENERAL NOTES	
130	C405	TRACTION POWER SUBSTATION (TPSS)	DUCTBANK SPECIAL DETAILS	192	P402	PLATFORM ROADSIDE ITS 343 CABINET DIAGRAM	
131	C406	TRACTION POWER SUBSTATION (TPSS)	TYPICAL LOW VOLTAGE 5'x7' MANHOLE DETAILS	193	P403	CCTV ATTACHMENT ON OCS AND LIGHT POLE DETAILS	
132	C407	TRACTION POWER SUBSTATION (TPSS)	COMMUNICATIONS AND STRAY CURRENT PULLBOX TYPICAL DETAILS	194	P404	STREETCAR STOP "RIVER MARKET NORTH"	ELECTRICAL AND ITS PLAN
133	C408	TRACTION POWER SUBSTATION (TPSS)	TYPICAL NEGATIVE RETURN DETAIL TRACK BLOCKOUT DETAIL AND TYPICAL CONDUIT STUB-UP DETAIL	195	P405	STREETCAR STOP "RIVERFRONT"	ELECTRICAL AND ITS PLAN
134	C409	TRACTION POWER SUBSTATION (TPSS)	TYPICAL NEGATIVE RETURN DETAIL TRACK BLOCKOUT DETAIL AND TYPICAL CONDUIT STUB-UP DETAIL	196	P406	ITS TYPICAL DRAWING	TYPICAL STOP ELECTRICAL SCHEDULES AND DETAILS
TPSS DETAILS				PLATFORM STRUCTURAL			
135	J101	TRACTION POWER SYSTEM	MASTER SINGLE LINE DIAGRAM RIVERFRONT EXTENSION	197	PS001	STRUCTURAL GENERAL NOTES	
136	J610	TRACTION POWER	TYPICAL MAINLINE TPSS SINGLE LINE SINGLE LINE DIAGRAM	198	PS002	INSPECTION - IBC 2018	
137	J620	TRACTION POWER	TYPICAL PREFABRICATED TPSS PLAN EQUIPMENT LAYOUT PLAN	199	PS101	"TYPE A" SHELTER - FOUNDATION AND FRAMING PLANS	
138	J621	TRACTION POWER	TYPICAL PREFABRICATED TPSS - EXTERIOR ELEVATIONS ELEVATION VIEW	200	PS102	"TYPE B" SHELTER - FOUNDATION AND FRAMING PLANS	
139	J622	TRACTION POWER	TYPICAL PREFABRICATED TPSS INTERIOR ELEVATIONS INTERIOR ELEVATIONS	201	PS201	"TYPE A" SHELTER - SECTIONS AND ELEVATIONS	
140	J623	TRACTION POWER	TYPICAL SURGER ARRESTER INTERIOR ELEVATIONS	202	PS202	"TYPE B" SHELTER - SECTIONS AND ELEVATIONS	
141	J630	TRACTION POWER	TPSS D1 SITE RACEWAY LAYOUT	203	PS301	TYPICAL CONCRETE DETAILS	
142	J632	TRACTION POWER	TPSS D1 GROUND GRID LAYOUT	204	PS302	"TYPE A" SHELTER CONCRETE DETAILS	
143	J640	TRACTION POWER	TYPICAL DISCONNECT SWITCH ARRANGEMENT	205	PS303	"TYPE B" SHELTER CONCRETE DETAILS	
144	J642	TRACTION POWER	120/208V AC PANEL ADP PANEL SCHEDULE	206	PS501	TYPICAL STEEL SECTIONS AND DETAILS	
145	J643	TRACTION POWER	125V DC PANEL DDP PANEL SCHEDULE	PLATFORM ELEVATION PLANS			
146	J644	TRACTION POWER	TYPICAL TPSS LIGHTING SCHEMATIC	207	PS01	"RIVER MARKET NORTH" PLATFORM	SIGNAGE LOCATION ELEVATION
147	J645	TRACTION POWER	TYPICAL TPSS RECEPTACLES AND SMOKE DETECTOR SCHEMATIC	208	PS02	"RIVERFRONT" PLATFORM	SIGNAGE LOCATION ELEVATION
148	J646	TRACTION POWER	TYPICAL TPSS HVAC AND VENTILATION SCHEMATIC	209	PS03	SIGNAGE TYPES OVERVIEW	
149	J648	TRACTION POWER	LOGIC DIAGRAMS SYMBOLS AND LEGEND	210	PS04	SIGNAGE TYPES OVERVIEW	
150	J649	TRACTION POWER	SUBSTATION LOCKOUT AND ALARM LOGIC DIAGRAM	211	PS05	SIGNAGE TYPES OVERVIEW	
151	J650	TRACTION POWER	AC SWITCHGEAR INCOMING CUBICLE LOGIC DIAGRAM	212	PS06	SIGNAGE TYPES OVERVIEW	
152	J652	TRACTION POWER	TYPICAL DC FEEDER CUBICLE LOGIC DIAGRAM SHEET 1 OF 2	213	PS07	"RIVER MARKET NORTH" PLATFORM	WAYFINDING PLAN
153	J653	TRACTION POWER	TYPICAL DC FEEDER CUBICLE LOGIC DIAGRAM SHEET 2 OF 2	TRAFFIC SIGNAL LAYOUT PLANS			
154	J654	TRACTION POWER	NEGATIVE AND POSITIVE DISCONNECT SWITCH LOGIC DIAGRAM	214	T100	TRAFFIC SIGNAL GENERAL NOTES	
155	J660	TRACTION POWER	STATION CONTROL CABINET TYPICAL LAYOUT	215	T101	TRAFFIC SIGNAL LAYOUT PLAN	3RD STREET AND GRAND BOULEVARD
156	J661	TRACTION POWER	RAIL TO GROUND (R2G) CABINET TYPICAL LAYOUT	216	T101A	TRAFFIC SIGNAL LAYOUT PLAN	3RD STREET AND GRAND BOULEVARD
157	J665	TRACTION POWER	TPSS COMMUNICATIONS BLOCK DIAGRAM	217	T101B	TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING	3RD STREET AND GRAND BOULEVARD
158	J673	TRACTION POWER	TYPICAL GROUNDING DETAILS	218	T101C	TRAFFIC SIGNAL SUMMARY OF QUANTITIES	3RD STREET AND GRAND BOULEVARD
159	J680	TRACTION POWER	D1 CONDUCTOR SCHEDULE	219	T102	TRAFFIC SIGNAL LAYOUT PLAN	2ND STREET AND GRAND BOULEVARD
160	J690	TRACTION POWER	TYPICAL TPSS HMI ALARM SCREEN LAYOUT	220	T102A	TRAFFIC SIGNAL LAYOUT PLAN	2ND STREET AND GRAND BOULEVARD
161	J691	TRACTION POWER	TYPICAL TPSS HMI CONTROL SCREEN LAYOUT	221	T102B	TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING	2ND STREET AND GRAND BOULEVARD
162	J692	TRACTION POWER	TYPICAL TPSS HMI EVENT LOG SCREEN LAYOUT	222	T102C	TRAFFIC SIGNAL SUMMARY OF QUANTITIES	2ND STREET AND GRAND BOULEVARD
163	J693	TRACTION POWER	TYPICAL TPSS HMI NETWORK STATUS SCREEN LAYOUT	223	T103	TRAFFIC SIGNAL LAYOUT PLAN	BERKLEY PARKWAY / RIVERFRONT DRIVE
164	J694	TRACTION POWER	TYPICAL SUBSTATION FOUNDATION DETAIL	224	T103B	TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING	BERKLEY PARKWAY / RIVERFRONT DRIVE
165	J695	TRACTION POWER	TYPICAL PAD MOUNTED DISCONNECT SWITCH FOUNDATION DETAILS	225	T103C	TRAFFIC SIGNAL SUMMARY OF QUANTITIES	BERKLEY PARKWAY / RIVERFRONT DRIVE
DRAINAGE PLANS				TRAFFIC SIGNAL DETAILS			
166	D101	DRAINAGE PLAN	NB STA BEGIN TO STA 113+00	226	T201	TRAFFIC SIGNAL DETAILS	CROSS SPAN JOINT USE TRAFFIC/OCS POLE
167	D102	DRAINAGE PLAN	NB STA 113+00 TO STA 117+00	227	T202	TRAFFIC SIGNAL DETAILS	AUXILIARY CABINET MOUNTING DETAIL
168	D103	DRAINAGE PLAN	NB STA 117+00 TO STA 121+00	228	T203	TRAFFIC SIGNAL DETAILS	TRAFFIC SIGNAL SYMBOLS
169	D106	DRAINAGE PLAN	NB STA 129+00 TO STA 133+00	229	T204	TRAFFIC SIGNAL DETAILS	SIGNAL HEAD DETAILS
170	D109	DRAINAGE PLAN	NB STA 139+50 TO STA 143+50	230	T205	TRAFFIC SIGNAL DETAILS	SIGNAL MAST ARM DETAILS
171	D110	DRAINAGE PLAN	NB STA 143+50 TO STA 147+50	231	T206	TRAFFIC SIGNAL DETAILS	SIGNAL CONCRETE BASE DETAILS
172	D111	DRAINAGE PLAN	NB STA 147+50 TO END	232	T207	TRAFFIC SIGNAL DETAILS	SIGNAL PULL BOX DETAILS
173	D301	MISCELLANEOUS DRAINAGE DETAILS		233	T208	TRAFFIC SIGNAL DETAILS	SIGNAL PULL BOX DETAILS
PLATFORMS				234	T209	TRAFFIC SIGNAL DETAILS	SIGNAL PTZ CAMERA INSTALL DETAILS
174	P101	"RIVER MARKET NORTH"	PLATFORM PLAN	235	T210	TRAFFIC SIGNAL DETAILS	PEDESTRIAN PUSHBUTTON POLE DETAILS
175	P102	"RIVERFRONT"	PLATFORM PLAN	236	T211	TRAFFIC SIGNAL DETAILS	PEDESTRIAN PUSHBUTTON POLE DETAILS
176	P201	"RIVER MARKET NORTH"	PLATFORM ELEVATION	SIGNING AND STRIPING PLANS			
177	P202	"RIVERFRONT"	PLATFORM ELEVATION	237	S001	SIGNING AND STRIPING	GENERAL NOTES
178	P203	PLATFORM SITE DETAILS		238	S100	SIGNING AND STRIPING PLAN	5TH TO 3RD STREET
179	P204	PLATFORM SEAT WALL DETAILS		239	S101	SIGNING AND STRIPING PLAN	NB STA BEGIN TO STA 113+00
180	P302	"TYPE A" SHELTER	PLANS AND ELEVATIONS	240	S102	SIGNING AND STRIPING PLAN	NB STA 113+00 TO STA 117+00
				241	S103	SIGNING AND STRIPING PLAN	NB STA 117+00 TO STA 121+00

REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: G011.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1	DRAWING NO.: G011	SHEET NO.: 3
			CHECKED BY	JWR								
			DRAWN BY	MMO								
			CHECKED BY	JWR								
			APPROVED BY	NKS								
PLOT DATE: \$DATE\$			\$TIME\$		DATE	12-23-2022	NOT FOR CONSTRUCTION		INDEX OF DRAWINGS SHEET 2			

#	dwg	TITLE	DESCRIPTION	#	dwg	TITLE	DESCRIPTION
242	S104	SIGNING AND STRIPING PLAN	NB STA 121+00 TO STA 125+00	302	ST308	BID ALTERNATE - 115RE JOINTS FINGER JOINT MODIFICATION PLAN - PIER 8	
243	S105	SIGNING AND STRIPING PLAN	NB STA 125+00 TO STA 129+00	303	ST309	BID ALTERNATE - 115RE JOINTS FINGER JOINT MODIFICATION DETAILS	
244	S106	SIGNING AND STRIPING PLAN	NB STA 129+00 TO STA 133+00	304	ST310	BID ALTERNATE - 115RE JOINTS STRIP SEAL REMOVAL AND REPLACEMENT PLAN - PIERS 11 & 12	
245	S107	SIGNING AND STRIPING PLAN	NB STA 133+00 TO STA 135+50	305	ST311	BID ALTERNATE - 115RE JOINTS STRIP SEAL DETAILS	
246	S108	SIGNING AND STRIPING PLAN	NB STA 135+50 TO STA 139+50	306	ST312	BID ALTERNATE - 115RE JOINTS TYPICAL SLAB SECTIONS AND DETAILS	
247	S109	SIGNING AND STRIPING PLAN	NB STA 139+50 TO STA 143+50	307	ST313	BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 2	
248	S110	SIGNING AND STRIPING PLAN	NB STA 143+50 TO STA 147+50	308	ST314	BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 5	
249	S111	SIGNING AND STRIPING PLAN	NB STA 147+50 TO END	309	ST315	BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 8	
250	S112	SIGNING AND STRIPING PLAN	2ND STREET TO VMF	310	ST316	BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 11	
251	S113	PAVEMENT MARKING TABULATION		311	ST317	BID ALTERNATE - 115RE JOINTS SLAB REINFORCING - PIER 12	
252	S114	SIGN REMOVAL TABULATION		312	ST318	BID ALTERNATE - 115RE JOINTS BILL OF REINFORCING STEEL (SLAB)	
253	S115	SIGN PANEL DETAILS		313	ST319	BID ALTERNATE - 115RE JOINTS BILL OF REINFORCING STEEL (SLAB)	
LIGHTING PLANS				314	ST320	BID ALTERNATE - 115RE JOINTS BILL OF REINFORCING STEEL (SLAB)	
254	L001	GENERAL LIGHTING NOTES AND SYMBOL LEGEND		315	ST321	BID ALTERNATE - 115RE JOINTS EAST BARRIER RAIL AT PIER 2, 5 & 8	
255	L101	LIGHTING PLAN	NB STA BEGIN TO STA 113+00	316	ST322	BID ALTERNATE - 115RE JOINTS EAST BARRIER RAIL AT PIER 11 & 12	
256	L102	LIGHTING PLAN	NB STA 113+00 TO STA 117+00	317	ST323	BID ALTERNATE - 115RE JOINTS EAST BARRIER DETAILS	
257	L103	LIGHTING PLAN	NB STA 117+00 TO STA 121+00	318	ST324	BID ALTERNATE - 115RE JOINTS WEST BARRIER RAIL AT PIER 2, 5 & 8	
258	L104	LIGHTING PLAN	NB STA 121+00 TO STA 125+00	319	ST325	BID ALTERNATE - 115RE JOINTS WEST BARRIER RAIL AT PIER 11 & 12	
259	L105	LIGHTING PLAN	NB STA 125+00 TO STA 129+00	320	ST326	BID ALTERNATE - 115RE JOINTS WEST BARRIER DETAILS	
260	L106	LIGHTING PLAN	NB STA 129+00 TO STA 133+00	321	ST328	BID ALTERNATE - 115RE JOINTS BARRIER DETAILS 1	
261	L107	LIGHTING PLAN	NB STA 133+00 TO STA 135+50	322	ST329	BID ALTERNATE - 115RE JOINTS BARRIER DETAILS 2	
262	L108	LIGHTING PLAN	NB STA 135+50 TO STA 139+50	323	ST330	BID ALTERNATE - 115RE JOINTS BARRIER DETAILS 3	
263	L109	LIGHTING PLAN	NB STA 139+50 TO STA 143+50	324	ST331	BID ALTERNATE - 115RE JOINTS EAST BARRIER BAR LIST	
264	L110	LIGHTING PLAN	NB STA 143+50 TO STA 147+50	325	ST332	BID ALTERNATE - 115RE JOINTS WEST BARRIER BAR LIST	
265	L111	LIGHTING PLAN	NB STA 147+50 TO END	EROSION CONTROL PLANS			
266	L112	LIGHTING PLAN	2ND STREET TO VMF	326	EC101	EROSION CONTROL PLAN	NB STA 135+50 TO STA 139+50
LIGHTING DETAILS				327	EC102	EROSION CONTROL PLAN	NB STA 139+50 TO STA 143+50
267	L300	STREET LIGHTING DETAILS		328	EC103	EROSION CONTROL PLAN	NB STA 143+50 TO STA 147+50
268	L301	STREET LIGHTING DETAILS		329	EC104	EROSION CONTROL PLAN	NB STA 147+50 TO END
269	L302	POWER AND LIGHTING DETAILS		OCS TECHNICAL SHEETS			
270	L303	POWER AND LIGHTING DETAILS		330	Y004	TECHNICAL SHEETS CONDUCTOR PARTICULARS	
271	L304	STREET LIGHTING SCHEDULES		331	Y005	TECHNICAL SHEETS VERTICAL ELECTRICAL CLEARANCE REQUIREMENTS	
272	L305	STREET LIGHTING SCHEDULES		332	Y006	TECHNICAL SHEETS PANTOGRAPH SECURITY	
273	L306	WIRING SCHEMATIC DETAILS		333	Y007	TECHNICAL SHEETS TYPICAL OFFSET AND STAGGER DETAILS	
274	L307	WIRING SCHEMATIC DETAILS		334	Y008	TECHNICAL SHEETS INSTALLATION TENSION CHART	
LANDSCAPE PLANS				335	Y009	TECHNICAL SHEETS ALONG TRACK MOVEMENT CHART	
275	LS101	LANDSCAPE PLAN	BERKLEY PARK - 1	336	Y010	TECHNICAL SHEETS VERTICAL AND RADIAL LOADS	
276	LS102	LANDSCAPE PLAN	BERKLEY PARK - 2	337	Y011	TYPICAL ARRANGEMENTS TYPICAL OVERLAP ARRANGEMENT	
277	LS103	LANDSCAPE PLAN	BERKLEY PARK - 3	338	Y012	TYPICAL ARRANGEMENTS AT GRAND BOULEVARD VIADUCT	
278	LS104	LANDSCAPE PLAN	GRAND BOULEVARD	339	Y013	TYPICAL ARRANGEMENTS AT APPROACH STRUCTURES	
279	LS201	LANDSCAPE DETAILS		340	Y021	STRUCTURAL DETAILS TYPICAL POLE DETAIL	
BRIDGE DETAILS 112TRAM				341	Y023	STRUCTURAL DETAILS STREETLIGHT POLE DETAIL	
280	ST100	BASE BID - 112TRAM JOINTS GENERAL NOTES		342	Y025	STRUCTURAL DETAILS DOWN GUY ASSEMBLY	
281	ST101	BASE BID - 112TRAM JOINTS DECK MILL AND OVERLAY LIMITS	1 OF 3	343	Y031	STRUCTURAL DETAILS TYPICAL FOUNDATION DETAIL	
282	ST102	BASE BID - 112TRAM JOINTS DECK MILL AND OVERLAY LIMITS	2 OF 3	344	Y033	STRUCTURAL DETAILS STREETLIGHT POLE FOUNDATION DETAIL	
283	ST103	BASE BID - 112TRAM JOINTS DECK MILL AND OVERLAY LIMITS	3 OF 3	345	Y034	STRUCTURAL DETAILS 2 FT DIAMETER FOUNDATION DETAIL	
284	ST104	BASE BID - 112TRAM JOINTS MODIFIED FINGER JOINT PLAN	PIERS 2 AND 5	346	Y035	STRUCTURAL DETAILS ROCK SOCKET AND DOWN GUY FOUNDATION DETAILS	
285	ST105	BASE BID - 112TRAM JOINTS MODIFIED FINGER JOINT PLAN	PIER 8	347	Y036	STRUCTURE DETAIL TYPICAL SPREAD FOOTING FOUNDATION DETAIL	
286	ST106	BASE BID - 112TRAM JOINTS FINGER JOINT MODIFICATION DETAILS		348	Y037	POLE INSTALLATION DETAILS AT GRAND BOULEVARD VIADUCT	SHEET 1 OF 2
287	ST107	BASE BID - 112TRAM JOINTS STRIP SEAL PLAN	PIERS 11 AND 12	349	Y038	POLE INSTALLATION DETAILS AT GRAND BOULEVARD VIADUCT	SHEET 2 OF 2
288	ST108	BASE BID - 112TRAM JOINTS STRIP SEAL DETAILS		350	Y039	STRUCTURAL DETAILS ANCHOR BOLT DETAIL	
289	ST109	BASE BID - 112TRAM JOINTS BRIDGE TYPICAL SECTIONS		351	Y041	BRACKET ARM ASSEMBLIES SINGLE PIPE BRACKET ARM	
BRIDGE TRACK DRAIN DETAILS				352	Y042	BRACKET ARM ASSEMBLIES DOUBLE PIPE BRACKET ARM	
290	ST201	PLAN VIEW - ABUTMENT 2 - TRACK DRAIN		353	Y043	BRACKET ARM ASSEMBLIES OVERLAP SINGLE PIPE BRACKET ARM	
291	ST202	APPROACH SLAB EXPANSION JOINT DRAIN DETAIL		354	Y044	BRACKET ARM ASSEMBLIES POLE CLAMP DETAILS	
292	ST203	EXISTING MSE WALLS		355	Y045	BRACKET ARM ASSEMBLIES BRACKET ARM POLE SOCKET	
293	ST204	TRACK SLAB DETAIL - OVER UTILITY VAULT		356	Y046	BRACKET ARM ASSEMBLIES OVERLAP BRACKET ARM MOUNTING BRACKET DETAIL	
BRIDGE DETAILS 115RE				357	Y047	BRACKET ARM ASSEMBLIES SECTION INSULATOR SUPPORT	
294	ST300	BID ALTERNATE - 115RE JOINTS GENERAL NOTES		358	Y051	SPAN WIRE ARRANGEMENTS CROSS SPAN DETAILS	
295	ST301	BID ALTERNATE - 115RE JOINTS MILL AND OVERLAY LIMITS - ABUT 1		359	Y052	SPAN WIRE ARRANGEMENTS HEADSPAN ASSEMBLY	
296	ST302	BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 2		360	Y056	REGISTRATION ASSEMBLIES PULLOVER ASSEMBLIES	SHEET 1 OF 2
297	ST303	BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 5		361	Y057	REGISTRATION ASSEMBLIES PULLOVER ASSEMBLIES	SHEET 2 OF 2
298	ST304	BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 8		362	Y058	REGISTRATION ASSEMBLIES PENDULUM SUSPENSION ASSEMBLIES	
299	ST305	BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 11		363	Y059	REGISTRATION ASSEMBLIES SUSPENSION ASSEMBLIES	
300	ST306	BID ALTERNATE - 115RE JOINTS CONCRETE REMOVAL - PIER 12					
301	ST307	BID ALTERNATE - 115RE JOINTS FINGER JOINT MODIFICATION PLAN - PIERS 2 & 5					

REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: G012.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1	DRAWING NO.:	SHEET NO.:
			CHECKED BY	JWR								
			DRAWN BY	MMO								
			CHECKED BY	JWR								
			APPROVED BY	NKS								
PLOT DATE: \$DATE\$			\$TIME\$	DATE	12-23-2022		10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		INDEX OF DRAWINGS SHEET 3	G012	4	
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#	dwg	TITLE	DESCRIPTION	#	dwg	TITLE	DESCRIPTION
364	Y061	IN-SPAN ASSEMBLIES JUMPER ASSEMBLIES		427	Z618	COMMUNICATIONS DETAILS	RING DIAGRAM SHEET 4
365	Y062	IN-SPAN ASSEMBLIES SECTION INSULATOR ASSEMBLY		428	Z619	COMMUNICATIONS DETAILS	RING DIAGRAM SHEET 5
366	Y063	IN-SPAN ASSEMBLIES TYPICAL SPLICE DETAILS		429	Z620	COMMUNICATIONS DETAILS	3RD ST SPLICE
367	Y064	IN-SPAN ASSEMBLIES SPAN SPACER AND CROSS CONTACT WIRE CLAMP ASSEMBLIES		430	Z621	COMMUNICATIONS DETAILS	3RD ST SPLICE INSET
368	Y065	IN-SPAN ASSEMBLIES CONTACT WIRE PROTECTION BOARD		431	Z622	COMMUNICATIONS DETAILS	2ND ST SPLICE
369	Y066	SWITCHING AND FEEDER ASSEMBLIES FEEDER TAP DETAILS		432	Z623	COMMUNICATIONS DETAILS	SUB STATION SPLICE
370	Y067	SWITCHING AND FEEDER ASSEMBLIES SURGE ARRESTER DETAILS		433	Z624	COMMUNICATIONS DETAILS	BERKLEY PKWY SPLICE
371	Y068	SECTIONALIZING DIAGRAM		434	Z625	COMMUNICATIONS DETAILS	RIVERFRONT SPLICE DIAGRAM
372	Y069	POLE GROUND WIRE INSTALLATION GRAND BOULEVARD VIADUCT PIERS		435	Z626	COMMUNICATIONS DETAILS	RIVERFRONT STATION SPLICE
373	Y070	SWITCHING FEEDER ASSEMBLIES FEEDER TAP DETAILS		436	Z627	ITS CONDUIT HANGER DETAILS	
374	Y071	TERMINATION ASSEMBLIES FIXED TERMINATION ASSEMBLY		437	Z628	CONDUIT TRANSITION DETAIL	
375	Y072	TERMINATION ASSEMBLIES SPRING TENSIONER TERMINATION ASSEMBLY		438	Z629	ITS CONDUIT TRANSITION BOX DETAIL	
376	Y081	MISCELLANEOUS POLE NUMBERING DETAIL		439	Z630	ITS CONDUIT EXPANSION/DEFLECTION POINT	
377	Y092	CROSS SECTION HEART OF AMERICA BRIDGE		440	Z631	ITS CONDUIT RISER	
378	Y093	PROFILES HEART OF AMERICA	SHEET 1 OF 2	TRAIN CONTROL PLANS			
379	Y094	PROFILES HEART OF AMERICA	SHEET 2 OF 2	441	N101	TRAIN CONTROL PLAN	3RD & GRAND
380	Y097	CROSS SECTION OCS FEEDING POINT		442	N102	TRAIN CONTROL PLAN	2ND & GRAND
381	Y111	STRUCTURE SCHEDULE POLE AND FOUNDATION SCHEDULE	SHEET 1 OF 2	443	N103	TRAIN CONTROL PLAN	FRONT & BERKLEY
382	Y112	STRUCTURE SCHEDULE POLE AND FOUNDATION SCHEDULE	SHEET 2 OF 2	444	N104	TRAIN CONTROL PLAN	RIVERFRONT
OCS LAYOUT PLANS				445	N105	TRAIN CONTROL PLAN	VMF
383	Y198	KEY MAP		TRAIN SIGNALING			
384	Y199	MASTER OVERLAP CHART		446	N600	TRAIN CONTROL TRACK AND CABLE PLAN	3RD & GRAND
385	Y201	OCS LAYOUT PLAN	NB STA BEGIN TO STA 113+00	447	N601	TRAIN CONTROL TRACK AND CABLE PLAN	2ND & GRAND
386	Y202	OCS LAYOUT PLAN	NB STA 113+00 TO STA 117+00	448	N602	TRAIN CONTROL TRACK AND CABLE PLAN	FRONT STREET
387	Y203	OCS LAYOUT PLAN	NB STA 117+00 TO STA 121+00	449	N603	TRAIN CONTROL TRACK AND CABLE PLAN	RIVERFRONT
388	Y204	OCS LAYOUT PLAN	NB STA 121+00 TO STA 125+00	450	N604	TRAIN CONTROL ROUTE AND ASPECT CHART	3RD & GRAND
389	Y205	OCS LAYOUT PLAN	NB STA 125+00 TO STA 129+00	451	N605	TRAIN CONTROL ROUTE AND ASPECT CHART	2ND & GRAND
390	Y206	OCS LAYOUT PLAN	NB STA 129+00 TO STA 133+00	452	N606	TRAIN CONTROL ROUTE AND ASPECT CHART	RIVERFRONT
391	Y207	OCS LAYOUT PLAN	NB STA 133+00 TO STA 135+50	453	N607	TRAIN CONTROL TURNOUT BONDING	
392	Y208	OCS LAYOUT PLAN	NB STA 135+50 TO STA 139+50	454	N608	TRAIN CONTROL	TYPICAL SIGNAL CASE LAYOUT RELAY CASE
393	Y209	OCS LAYOUT PLAN	NB STA 139+50 TO STA 143+50	455	N609	TRAIN CONTROL	TYPICAL SIGNAL CASE FOUNDATION AND GROUNDING DETAILS
394	Y210	OCS LAYOUT PLAN	NB STA 143+50 TO STA 147+50	456	N610	TRAIN CONTROL	TYPICAL TWC LOOP INSTALLATION EMBEDDED TRACK
395	Y211	OCS LAYOUT PLAN	NB STA 147+50 TO END	457	N611	TRAIN CONTROL	CABLE / CONDUIT SCHEDULE
396	Y212	OCS BRIDGE GROUNDING LAYOUT PLAN	STA 117+00 TO STA 121+00	458	N612	TRAIN CONTROL	CABLE / CONDUIT SCHEDULE
397	Y213	OCS BRIDGE GROUNDING LAYOUT PLAN	STA 121+00 TO STA 125+00	459	N613	TRAIN CONTROL	CABLE / CONDUIT SCHEDULE
398	Y214	OCS BRIDGE GROUNDING LAYOUT PLAN	STA 125+00 TO STA 129+00	RIGHT OF WAY PLANS			
399	Y215	OCS BRIDGE GROUNDING LAYOUT PLAN	STA 129+00 TO STA 133+00	460	RW001	RIGHT OF WAY KEY MAP	
400	Y216	OCS LAYOUT PLAN	2ND STREET TO VMF	461	RW101	RIGHT OF WAY PLAN	100 GRAND BLVD
401	Y217	OCS LAYOUT PLAN	ENLARGED VIEW	462	RW102	RIGHT OF WAY PLAN	101 GRAND BLVD
COMMUNICATION SCHEDULES				463	RW103	RIGHT OF WAY PLAN	599 E RIVERFRONT ROAD - SHEET 1
402	Z001	COMMUNICATION SCHEDULE		464	RW104	RIGHT OF WAY PLAN	599 E RIVERFRONT ROAD - SHEET 2
COMMUNICATION PLANS				465	RW105	RIGHT OF WAY PLAN	599 E RIVERFRONT ROAD - SHEET 3
403	Z101	COMMUNICATIONS PLAN	NB STA BEGIN TO STA 113+00	466	RW106	RIGHT OF WAY PLAN	599 E RIVERFRONT ROAD - SHEET 4
404	Z102	COMMUNICATIONS PLAN	NB STA 113+00 TO STA 117+00	DETOUR PLAN			
405	Z103	COMMUNICATIONS PLAN	NB STA 117+00 TO STA 121+00	467	DT101	DETOUR PLAN	
406	Z104	COMMUNICATIONS PLAN	NB STA 121+00 TO STA 125+00	MILL AND OVERLAY PLANS			
407	Z105	COMMUNICATIONS PLAN	NB STA 125+00 TO STA 129+00	468	R101	ROADWAY MILL AND OVERLAY PLAN AND PROFILE	STA 0+00 TO STA 4+00
408	Z106	COMMUNICATIONS PLAN	NB STA 129+00 TO STA 133+00	469	R102	ROADWAY MILL AND OVERLAY PLAN AND PROFILE	STA 4+00 TO STA 8+00
409	Z107	COMMUNICATIONS PLAN	NB STA 133+00 TO STA 135+50	470	R103	ROADWAY MILL AND OVERLAY PLAN AND PROFILE	STA 19+00 TO STA 23+00
410	Z108	COMMUNICATIONS PLAN	NB STA 135+50 TO STA 139+50	471	R104	ROADWAY MILL AND OVERLAY PLAN AND PROFILE	STA 23+00 TO STA 28+00
411	Z109	COMMUNICATIONS PLAN	NB STA 139+50 TO STA 143+50	472	R105	ROADWAY MILL AND OVERLAY PLAN AND PROFILE	2ND STREET TO VMF
412	Z110	COMMUNICATIONS PLAN	NB STA 143+50 TO STA 147+50	473	R201	ROADWAY MILL AND OVERLAY	ALIGNMENT TABLE GRAND BOULEVARD & BERKLEY PARKWAY
413	Z111	COMMUNICATIONS PLAN	NB STA 147+50 TO END	MILL AND OVERLAY CROSS SECTIONS			
414	Z112	COMMUNICATIONS PLAN	2ND STREET TO VMF	474	XS01	ROADWAY MILL AND OVERLAY CROSS SECTIONS	GRAND BOULEVARD
COMMUNICATION DETAILS				475	XS02	ROADWAY MILL AND OVERLAY CROSS SECTIONS	GRAND BOULEVARD
415	Z601	SYSTEMWIDE ELECTRICAL	TYPICAL MANHOLE DETAILS	476	XS03	ROADWAY MILL AND OVERLAY CROSS SECTIONS	GRAND BOULEVARD
416	Z602	SYSTEMWIDE ELECTRICAL	MANHOLE INSTALLATION AND SWITCH HEATER/TRACK CIRCUIT BLOCKOUT DETAILS	477	XS04	ROADWAY MILL AND OVERLAY CROSS SECTIONS	GRAND BOULEVARD
417	Z603	SYSTEMWIDE ELECTRICAL	FIBER OPTIC SPLICE VAULT	478	XS05	ROADWAY MILL AND OVERLAY CROSS SECTIONS	GRAND BOULEVARD
418	Z604	SYSTEMWIDE ELECTRICAL	HANDHOLE DETAILS	479	XS06	ROADWAY MILL AND OVERLAY CROSS SECTIONS	GRAND BOULEVARD
419	Z606	SYSTEMWIDE ELECTRICAL	TYPICAL TRACK CIRCUIT BLOCKOUT DETAIL	480	XS07	ROADWAY MILL AND OVERLAY CROSS SECTIONS	BERKLEY PARKWAY
420	Z607	SYSTEMWIDE ELECTRICAL	TRACK TURNOUT BLOCKOUT DETAIL	481	XS08	ROADWAY MILL AND OVERLAY CROSS SECTIONS	BERKLEY PARKWAY
421	Z608	SYSTEMWIDE ELECTRICAL	TYPICAL DUCTBANK INSTALLATION MANHOLE AND CONDUIT LABELING AND CONDUIT STUB-UP DETAIL	482	XS09	ROADWAY MILL AND OVERLAY CROSS SECTIONS	BERKLEY PARKWAY
422	Z609	SYSTEMWIDE ELECTRICAL	COMMUNICATION CONDUIT TYPICAL SECTIONS	483	XS10	ROADWAY MILL AND OVERLAY CROSS SECTIONS	2ND STREET
423	Z614	COMMUNICATIONS DETAILS	NETWORK DIAGRAM	484	XS11	ROADWAY MILL AND OVERLAY CROSS SECTIONS	2ND STREET
424	Z615	COMMUNICATIONS DETAILS	RING DIAGRAM SHEET 1	485	XS12	ROADWAY MILL AND OVERLAY CROSS SECTIONS	2ND STREET
425	Z616	COMMUNICATIONS DETAILS	RING DIAGRAM SHEET 2	486	XS13	ROADWAY MILL AND OVERLAY CROSS SECTIONS	2ND STREET
426	Z617	COMMUNICATIONS DETAILS	RING DIAGRAM SHEET 3				

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STANDARD ABBREVIATIONS

CS

D, Dc

Δ

DIA

ES

Ea

E+

Eu

I

L

Lc

LS

LS1

LS2

LS IN

LS OUT

L.T.

P

PC

PCC

PI

PITO

(PO)

POB

POC

POE

POS

POT

PRC

PT

PT-SW, PS

PVT

Qs

R

SC

SS

ST

S.T.

T

Tc

TEX

TO

Ts

TL

TS

TTL

TURNOUT #XXXXXX

XO

Xs

Ys

HORIZONTAL

POINT OF CHANGE FROM CIRCULAR CURVE TO SPIRAL

DEGREE OF CURVE (CURVATURE)

DELTA or DEFLECTION ANGLE (SPIRAL CURVE)

DIAMOND (CROSSOVER)

EXTERNAL DISTANCE

SUPERELEVATION, ACTUAL

SUPERELEVATION, TOTAL

SUPERELEVATION, UNBALANCED

TOTAL INTERSECTION ANGLE or TOTAL CENTRAL ANGLE

TOTAL CURVE LENGTH

TOTAL LENGTH OF CHORD

TOTAL LENGTH OF SPIRAL CURVE

SUFFIX (1) AT THE SYMBOL DENOTES THE DATA FOR THE FIRST SPIRAL ON AN UNSYMMETRICAL SPIRALIZED CURVE

SUFFIX (2) - SAME AS ABOVE, SECOND SPIRAL

SUFFIX (IN) AT THE SYMBOL DENOTES THE DATA FOR THE LEADING SPIRAL OF A SPIRALIZED CURVE

SUFFIX (OUT) AT THE SYMBOL DENOTES THE DATA FOR THE TRAILING SPIRALIZED CURVE

LONG TANGENT

TROW

POINT OF CURVATURE or POINT OF CHANGE FROM TANGENT TO CIRCULAR CURVE

POINT OF COMPOUND CIRCULAR CURVES

POINT OF INTERSECTION OF TWO TANGENTS

POINT OF INTERSECTION, TURNOUT

POWER OPERATED (REFERS TO TURNOUT)

POINT OF BEGINNING

POINT ON CIRCULAR CURVE

POINT OF ENDING

POINT ON SPIRAL

POINT ON TANGENT

POINT OF REVERSE CIRCULAR CURVE

POINT OF TANGENCY or POINT OF CHANGE FROM CIRCULAR CURVE TO TANGENT

POINT OF SWITCH

POINT OF VERTICAL TANGENCY

CENTRAL ANGLE OF SPIRAL or SPIRAL ANGLE

RADIUS OF CIRCULAR CURVE

POINT OF CHANGE FROM SPIRAL TO CIRCULAR CURVE

POINT OF CHANGE FROM SPIRAL TO SPIRAL

POINT OF SPIRAL TO TANGENT

SHORT TANGENT

TOTAL CURVE TANGENT LENGTH OF COMPLETE CURVE

TANGENT LENGTH FROM PC or PT TO P1

TRACK EDGE CROSS-SLOPE

TURNOUT

TANGENT DISTANCE FROM TS or ST TO P1

TOTAL LENGTH OF CURVE (SPIRAL & CIRCULAR PORTIONS)

POINT OF CHANGE FROM TANGENT TO SPIRAL

TOTAL TANGENT LENGTH (SPIRALS & CIRCULAR PORTIONS)

TURNOUT # IS NUMERICAL FORM OF PSW STATION

CROSSOVER

TANGENT DISTANCE AT SC or CS

TANGENT OFFSET AT SC or CS

VERTICAL

RATE OF VERTICAL CURVATURE OR LENGTH OF CURVE

PER PERCENT DIFFERENCE IN TWO ALGEBRAIC GRADES

LENGTH OF VERTICAL CURVE

POINT OF COMPOUND VERTICAL CURVE

POINT OF VERTICAL CURVATURE

POINT OF VERTICAL INTERSECTION or POINT OF INTERSECTION OF TWO PROFILE TANGENTS

RATE OF CHANGE IN CURVATURE

POINT OF REVERSE VERTICAL CURVE

POINT OF VERTICAL TANGENCY

VERTICAL CURVE

ELEVATION

TEX

A/K901

SECTION A

SHEET K901

AASHTO

ABC

ABND

ABUT

&

AC or A.C.

ACC.

ADA

AGG

ALIGN

ALT.

APPROX

APWA

A.R.E.M.A.

A/R

A.S.

ASCE

ASME

ASPH

ASTM

@

ATC

ATMS

AVE

AWG

BE

BEG

BET

BIT

BK

BL

BLDG

BLVD

BM

BNSF

B.O.

BOT

BRDG

BRG

BRK

BTCL

BU CA or BCTV

BU

BCR

C

CAS

CTV

CB

CBC

c-c

CD

CFS

C&G

CI or C.I.

CIP

CL or CL

CLG

CLR

CMP

C/O

CO

COL

CONC

CONN

CONST or CONSTR

CONT

CSP

CNL

COORD

COR

CORR

CP

CRK

CRV

C/S

CWSW

CT

CULV or CUL

CU YD or C.Y. or CY

CWR

D

D. d

DB

DE

A

AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS

AGGREGATE BASE COURSE

ABANDONED

ABUTMENT

AND

ASBESTOS CEMENT

ACCESS

AMERICANS WITH DISABILITIES ACT

AGGREGATE

ALIGNMENT

ALTERNATE

APPROXIMATE

AMERICAN PUBLIC WORKS ASSOCIATION

AMERICAN RAILWAY ENGINEERING & MAINTENANCE OF WAY ASSOCIATION

AS REQUIRED

AS SHOWN

AMERICAN SOCIETY OF CIVIL ENGINEERS

AMERICAN SOCIETY OF MECHANICAL ENGINEERS

ASPHALT

AMERICAN SOCIETY FOR TESTING AND MATERIALS

AT

AUTOMATIC TRAIN CONTROL

ADVANCED TRAFFIC MANAGEMENT SYSTEM

AVENUE

AMERICAN WIRE GAGE

B

BURIED ELECTRIC

BEGIN or BEGINNING

BETWEEN

BITUMINOUS

BACK

BASELINE

BUILDING

BOULEVARD

BENCH MARK

BURLINGTON NORTHERN AND SANTA FE RAILWAY

BOTTOM OF

BOTTOM

BRIDGE

BEARING

BRICK

BURIED TELEPHONE

BURIED CABLE

BOTTOM OF WALL or BACK OF WALL

BEGIN CURB RETURN

C

CUT (WALL)

CASING

CABLE TV LINE

CATCH BASIN

CONCRETE BOX CULVERT

CENTER TO CENTER

CHECK DAM

CUBIC FEET PER SECOND

CURB AND GUTTER

CURB INLET or CAST IRON

CAST IRON PIPE

CENTER LINE

CEILING

CLEARANCE or CLEAR

CORRUGATED METAL PIPE

CARE OF

CLEANOUT, COUNTY or COMPANY

COLUMN

CONCRETE

CONNECT or CONNECTION

CONSTRUCT or CONSTRUCTION

CONTINUED, CONTINUOUS or CONTINUATION

CORRUGATED STEEL PIPE

CANAL

COORDINATE

CORNER

CORRUGATE or CORRUGATED

CLAY PIPE or CONTROL POINT

CREEK

CURVE

COMMUNICATION/SIGNAL

CONCRETE SIDEWALK

COURT

CULVERT

CUBIC YARD

CONTINUOUS WELDED RAIL

D

DEPTH

DIVERSION BOX

DRAWING EQUIPMENT

DEB

DED

DEF or DEFL

DEPT

DF

DG

DI or D.I.

DIP

DIA or Ø

DIAG

DIM

DIST

DIT

DND

DPSS

DRTK

DW

DWG

DWY

e

EA

EB

E/E

EL or ELEV

ELEC.

EMH

E/O

EOA

EOH

EOP

EO

EQN

ES

ET

ETC

E/W

EXIST or EX

EXT

EXP

F

(F)

FB

FES

FF

FFE

FG

FH

FIN

FL or FL

FLG

FLR

FO

FOC

FP

FPS

FWY

FS

FAM

FBC

FIP

FT or FT.

FWHA

FRA

FTA

FTG

F&I

G

GA

GAL(S)

GALV

GI

GM

GND

GR

GSB

GSC

GV

GRS

H or HT

HCL

HD

HDPE

HF

HG

HL

HMAC

DETENTION BASIN

DECK DRAIN

DEFLECTION

DEPARTMENT

DIRECT FIXATION

DIESEL GAS or DRY GAS

DUCTILE IRON

DUCTILE IRON PIPE

DIAMETER

DIAGRAM or DIAGONAL

DIMENSION

DISTRICT or DISTANCE

OPEN DITCH

DO NOT DISTURB

DOUBLE POINT SPLIT SWITCH

DRILL TRACK

DOMESTIC WATER

DRAWING

DRIVEWAY

CROSS SLOPE BETWEEN THE RAILS

EAST, EASTING or ELECTRIC

EACH

EASTBOUND or END OF BRIDGE

EAST OF EAST RIGHT-OF-WAY LINE

ELEVATION

ELECTRICAL

ELECTRICAL MANHOLE

EAST OF

EDGE OF ASPHALT

OVERHEAD ELECTRIC

EDGE OF PAVEMENT

EQUAL or EQUATION

EQUATION

EXTRA STRENGTH

END TRACK

ETCETERA

EAST OF WEST RIGHT-OF-WAY LINE

EXISTING

EXTERIOR

EXPANSION

FILL (WALL) or FIBER

FREIGHT

FREEBOARD

FLARED END SECTION

FINISHED FLOOR or FAR FACE or FRONT FACE

FINISHED FLOOR ELEVATION

FROG GAUGE PLATE or FINISH GRADE

FIRE HYDRANT

FINISH

FLOWLINE

FLANGE

FLOOR

FIBER OPTIC LINE

FACE OF CURB

FIRE PROTECTION

FOOT PER SECOND

FREEWAY

FLAGSTONE or FINISHED SURFACE

FOUND ALUMINUM MONUMENT

FOUND BRASS CAP

FOUND IRON PIN

FOOT or FEET

FEDERAL HIGHWAY ADMINISTRATION

FEDERAL RAILROAD ADMINISTRATION

FEDERAL TRANSIT ADMINISTRATION

FOOTING

FURNISH & INSTALL

GAS

GAUGE (GAGE)

GALLON (GALLONS)

GALVANIZED

GROUND INLET

GAS METER

GROUND

GRADE, GROUND or GUARD RAIL PLATE

GROUTED SLOPING BOULDER

GALVANIZED STEEL CONDUIT

GATE VALVE

GALVANIZED RIGID STEEL CONDUIT

HEIGHT

HORIZONTAL CONTROL LINE

HEAD

HIGH DENSITY POLYETHYLENE

HEEL OF FROG

HEAD GATE

HEEL LENGTH

HOT MIX ASPHALT CONCRETE

HP

Hp

HS

HSS

HW

HWY

HORIZ

HGL

HH

HSS

I

ID

IHP

IHRL

IJ

IN

INC.

INV

IP

IRB

IRC

IRD

IRP

J

JB

JT

J&B

K

KCAT

KCMO

KCP&L

KCS

KCSA

KCTRR

KF

KLF

KSF

KV

L

LB

LCD

LED

LF

LH

LLC

LN

LONG.

LP

LPT

LRT

LT

LTD

LTG

MAINT

MAX or MAX.

MDPE

MECH

MH

MIL

MIN OR MIN.

MISC

MJ

M/L

ML

MODOT

MON

MP

MPH

MSE

MUTCD

N

N/A

NB

NE

NF

NIC

N/N

N/O

NO., NOS or #

NRCP

N/S

NTS

NW

HIGH PRESSURE or HEEL PLATE

HORSEPOWER

HIGH STRENGTH STEEL

HOLLOW STRUCTURAL SECTION

HEAD WALL

HIGHWAY

HORIZONTAL

HYDRAULIC GRADE LINE

HAND HOLE

HOLLOW STRUCTURAL SECTION

INSIDE DIAMETER or IDENTIFICATION

INTERMEDIATE HIGH PRESSURE

INDIVIDUAL HIGH RAIL LEVEL

INSULATED JOINT

INCH or INCHES

INCORPORATED

INVERT

IRON PIPE

IRRIGATION JUNCTION or DIVERSION BOX

IRRIGATION CULVERT

IRRIGATION DITCH

IRRIGATION PIPE

JUNCTION BOX

JOINT

JACK & BORE

KIP, 1000 POUNDS

KANSAS CITY AREA TRANSPORTATION AUTHORITY

KANSAS CITY, MISSOURI

KANSAS CITY POWER & LIGHT

KANSAS CITY SOUTHERN RAILROAD

KANSAS CITY STREETCAR AUTHORITY

KANSAS CITY TERMINAL RAILROAD

KIP-FOOT

KIPS PER LINEAR FOOT

KIPS PER SQUARE FOOT

KILOVOLTS

LINE or LENGTH

POUND or ELBOW

LIQUID CRYSTAL DISPLAY

LIGHT EMITTING DIODE

LINEAR FOOT (FEET)

LEFT HAND

LIMITED LIABILITY CORPORATION

LANE

LOCATE, LOCATED or LOCATION

LONGITUDINAL

LOW PRESSURE or LIGHT POLE

LOW POINT

LIGHT RAIL TRANSIT

LEFT

LIMITED

LIGHTING

MAINTENANCE

MAXIMUM

MEDIUM DENSITY POLYETHYLENE

MECHANICAL

MANHOLE

0.001 INCH

MINIMUM

MISCELLANEOUS

MECHANICAL JOINT

MATCH LINE

MAINLINE

MISSOURI DEPARTMENT OF TRANSPORTATION

MONUMENT

MEDIUM PRESSURE/MILE POST

MILES PER HOUR

MECHANICALLY STABILIZED EARTH

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

N

NORTH or NORTHING

NOT APPLICABLE

NORTHBOUND

NORTHEAST

NEAR FACE

NOT IN CONTRACT

NORTH OF NORTH RIGHT-OF-WAY LINE

NORTH OF

NUMBER

NON-REINFORCED CONCRETE PIPE

NORTH OF SOUTH RIGHT-OF-WAY LINE

NOT TO SCALE

NORTHWEST

REV

DATE

DESCRIPTION

DESIGNED BY

MMO

CHECKED BY

JWR

DRAWN BY

MMO

CHECKED BY

JWR

APPROVED BY

NKS

PLOT DATE:

12/22/2022

4:16:48 PM

DATE

12-23-2022

RideKC

STREETCAR

STATE OF MISSOURI

JAMES W. RICE - P.E.

12-23-2022

12-23-2022

JAMES W. RICE - ENGINEER

LICENSE NO. 2012018122

ISSUED FOR BID

DATE: 12-23-2022

HDR

HDR Engineering, Inc.

10450 Holmes Road

Suite 600

Kansas City, MO 64131-3471

816-360-2700

Certificate of Authority: 000856

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

STANDARD ABBREVIATIONS

SHEET 1 OF 2

SCALE FOR 22"x34":

NOT TO SCALE

FILENAME:

G030.dgn

CONTRACT NO.:

CONTRACT NO. ***

VOLUME:

1

DRAWING NO.:

SHEET NO.:

G030

6

STANDARD ABBREVIATIONS

GENERAL ABBREVIATIONS

O
OC or O.C. ON CENTER or ON CENTERS
OCS OVERHEAD CATENARY SYSTEM
OD or O.D. OUTSIDE DIAMETER or OUTSIDE DIMENSION
OFO OVERHEAD FIBER OPTIC
OHC OVERHEAD COAXIAL
OHP OVERHEAD POWER
OHT OVERHEAD TELEPHONE
OPP OPPOSITE

P
P PIPE
(P) PASSENGER
PAR PEDESTRIAN ACCESS ROUTE
PB PULL BOX
PCC PORTLAND CEMENT CONCRETE
PCCP PORTLAND CEMENT CONCRETE PAVEMENT
PCL PROJECT CONTROL LINE
PE POLYETHYLENE
PED PEDESTRIAN
PF POINT OF FROG
PGL PROFILE GRADE LINE
PKG PARKING
PL PROPERTY LINE
PLUM'G PLUMBING
POB POINT OF BEGINNING
POE POINT OF ENDING
POL POINT ON LINE
PP POWER POLE
PROP PROPERTY
PR PROPOSED
PEP POLYETHYLENE PIPE
(PO) POWER OPERATED
PSF POUNDS PER SQUARE FOOT
PSI POUNDS PER SQUARE INCH
PSW POINT OF SWITCH
PET PETROLEUM
PVC POLYVINYL CHLORIDE
PVMT PAVEMENT

Q
QTY QUANTITY
QUAD QUADRANT

R
R RADIUS
RC REINFORCED CONCRETE
RCB REINFORCED CONCRETE BOX
RCH REACH
RCP REINFORCED CONCRETE PIPE
RD ROAD
RECT RECTANGLE or RECTIFIER
REF REFERENCE
REINF REINFORCE, REINFORCED or REINFORCEMENT
REM REMOVE
RET RETAINING
REV REVISE, REVISED or REVISION
REQ'D REQUIRED
RGS RIGID GALVANIZED STEEL
RH RIGHT HAND
RR RAILROAD
RRS or RS RAILROAD SIGNAL
RSC RAILROAD SIGNAL & COMMUNICATION
RT RIGHT
RTS RETENTION SWALE
RET W OR RW RETAINING WALL
ROW or R/W RIGHT OF WAY
RVR RIVER
RY RAILWAY

S
S SOUTH or SLOPE
SALV SALVAGE
SB SOUTHBOUND
SC STREET CAR
SD STORM DRAIN
SDC STORM DRAIN CULVERT
SDCB STORM DRAIN CATCH BASIN
SDCO STORM DRAIN CLEAN OUT
SDD STORM DRAIN DITCH
SDMH STORM DRAIN MANHOLE
SDP STORM DRAIN PIPE
SDPS STORM DRAIN PUMP STATION
SDS STORM DRAIN SWALE
SDV STORM DRAIN VAULT
SE SOUTHEAST
SECT SECTION
SGL SUB-GRADE LINE
SHT SHEET
SIG SIGNAL
SIM SIMILAR
SL SEWER LATERAL
SLP SLOPE
SMH SEWER MANHOLE

S/N SOUTH OF NORTH RIGHT-OF-WAY LINE
S/O SOUTH OF
SP SPACE or SPACING or SIGNAL POLE or STATION POINT
SPEC SPECIFICATIONS
SO SQUARE
S/S SOUTH OF SOUTH RIGHT-OF-WAY LINE
SSP SMOOTH STEEL PIPE
ST STREET
STA STATION
STD STANDARD
STL STEEL
STOR STORAGE
STR OR STRUCT STRUCTURE
SW SOUTHWEST, SWITCH or SIDEWALK
SWR OR SS SANITARY SEWER
SYM SYMMETRICAL

T
T or TEL TELEPHONE
TAN TANGENT
TB TOP OF BALLAST
TBC TOP BACK OF CURB
TBD TO BE DETERMINED
TBS TO BE SURVEYED
TCB TRAFFIC CONTROL BOX
TD TRACK DRAIN
TEMP TEMPERATURE or TEMPORARY
TERM TERMINAL
TF TRACK FOOT
TC TOP OF GRADE or TOP OF GRATE
TH TEST HOLE
THK THICK or THICKNESS
THRU THROUGH
TL TRAFFIC LIGHT or TOE LENGTH
TMH TELEPHONE MANHOLE
T.O. TOP OF
TOC TRAFFIC OPERATIONS CENTER
TOD TRANSIT ORIENTED DEVELOPMENT
TOP TOP OF PIPE
T/R or TOR TOP OF RAIL
TOS TOE OF SLOPE
TPSS TRACTION POWER SUBSTATION
TRANS. TRANSITION
TRFY TRAFFICWAY
TRK TRACK
TS TRAFFIC SIGNAL
T.S. TYPICAL SECTION
TSB TOP OF SUB-BALLAST
TSC TRAFFIC SIGNAL CONDUIT
TV TELEVISION
T/W TOP OF WALL
TYP TYPICAL

U
UD UNDERDRAIN
UFO UNDERGROUND FIBER OPTIC
UG UNDERGROUND
UGC UNDERGROUND COAXIAL
UGP UNDERGROUND POWER
UGT UNDERGROUND TELEPHONE
UNO or UON UNLESS NOTED OTHERWISE
UNK UNKNOWN
UPRR UNION PACIFIC RAILROAD
URC UNREINFORCED CONCRETE
US UNITED STATES

V
V VALVE or VELOCITY
VAR VARIES or VARIABLE
VC VERTICAL CURVE
VCP VITRIFIED CLAY PIPE
VERT VERTICAL
VLT VAULT
VMF VEHICLE MAINTENANCE FACILITY
VMS VARIABLE MESSAGE SIGN

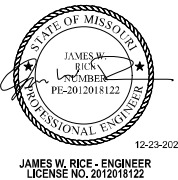
W
W WEST or WATER or WIDTH
W/ WITH
WB WESTBOUND
W/E WEST OF EAST RIGHT-OF-WAY LINE
WIP WROUGHT IRON PIPE
WL WATER LEVEL
WM WATER METER
W/O WITHOUT or WEST OF
WP WEATHERPROOF
WR WIRE RUN
WS WATER SERVICE
WSP WELDED STEEL PIPE
WTR WATER
WV WATER VALVE
W/W WEST OF WEST RIGHT-OF-WAY LINE
WSE WATER SURFACE ELEVATION
WW WING WALL

X
X-DRAIN CROSS DRAIN
X-ING CROSSING
X-SECT CROSS SECTION

> GREATER THAN
≥ GREATER THAN OR EQUAL TO
< LESS THAN
≤ LESS THAN OR EQUAL TO

REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		4:16:50 PM

DESIGNED BY	MMO
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE
STANDARD ABBREVIATIONS SHEET 2 OF 2		FILENAME: G031.dgn
		CONTRACT NO.: CONTRACT NO. ***
		VOLUME: 1
		DRAWING NO.: G031
		SHEET NO.: 7

SYMBOLS

<90.2>

SPAN LENGTH IN FEET BETWEEN POLES / SUPPORTS

◁ 7.82 ▷

DISTANCE IN FEET BETWEEN CROSS CONTACT CLAMP AND TRACK POINT OF SWITCH

2.3°

CONTACT WIRE LINE ANGLE

↑ 9"

STAGGER / OFFSET, DIRECTION FROM TRACK CENTERLINE, VALUE PROVIDED IN INCHES

F

FLOATING/ UNREGISTERED CONTACT WIRE

21.7/3075

HEIGHT (FT) / TENSION (LBS)

⊗

SPRING TENSIONER

⌒

BUILDING ATTACHMENT

●

EXISTING POLE

⊗

NEW POLE

⊗

NEW FEEDER POLE

☀

NEW COMBINATION STREETLIGHT AND OCS POLE

⊗

NEW COMBINATION TRAFFIC SIGNAL AND OCS POLE

⊙

NEW OCS POLE WITH REDUCED FOUNDATION

⋈

POINT OVERLAP

⋈

SPAN OVERLAP

⊗

OVERLAP BRACKET ARM

⊗

BRACKET ARM

⊗ --- ⊗

CROSS SPAN

⬠

SECTION INSULATOR

34,070 FT-LBS

RESULTANT MOMENT DIRECTION AND BENDING MOMENT AT BASE OF POLE

➡

CONTACT WIRE TERMINATION

FPO - 1

TYPICAL ASSEMBLY ALLOCATION

— / — / — / — / —

CROSS CONTACT WIRE BRIDGE

— — — — —

SPAN WIRE

— — — — —

BRACKET ARM GUY WIRE

⌒

CONTACT WIRE JUMPER ASSEMBLY (JRA-1)

⊗

SUPPLEMENTARY FEEDER CABLE STANDOFF BRACKET

⊗

FEEDER TAP FROM OCS POLE TO CONTACT WIRE

⊗

BULL RING AND SPAN WIRES

⊗

FLEXIBLE HANGER

⊗

SPAN SPACER

⊗

DISCONNECT SWITCH IN CLOSED POSITION

⊗

DISCONNECT SWITCH IN OPEN POSITION

⊗

BRACKET ARM GUY WIRE

⌒

OCS POLE BRIDGE ATTACHMENT

⌒

OCS POLE GROUNDING ON BRIDGE

⌒

OCS POLE DISCONNECT SWITCH

⊗

NEW OCS POLE WITH SPREAD FOOTING FOUNDATION

WIRE RUN - TENSION LENGTH INFORMATION

TERMINATION TYPE

WIRE RUN LENGTH IN FEET

POLE NO.

STATION

WIRE RUN DESIGNATION

MID-POINT

STATION

ABBREVIATIONS:

ACI	AMERICAN CONCRETE INSTITUTE	IN	INCHES	S	SOUTH
ADJ.	ADJACENT	INCU	INCHES CUBED	SB	SOUTHBOUND
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION	KC	KANSAS CITY	SBT	SOUTHBOUND TRACK
A/R	AS REQUIRED	KCMIL	THOUSAND CIRCULAR MILS	SCHED / SCH	SCHEDULE
AREMA	AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF WAY	KCSC	KANSAS CITY STREET CAR	SFH	SUPPLEMENTARY FEEDER HEIGHT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	KSI	KIPS PER SQUARE INCH	SHT.	SHEET
ATM	ALONG TRACK MOVEMENT	KV	KILOVOLT	SPTA	SPRING TENSIONER ASSEMBLY
AWG	AMERICAN WIRE GAUGE	LBS	POUNDS	SQ	SQUARE
AWS	AMERICAN WELDING SOCIETY	LNGT	LENGTH	SS	STAINLESS STEEL
BLVD	BOULEVARD	MAX.	MAXIMUM	STA	STATIONING
CAT	CATALOG	MIN.	MINIMUM	STL	STEEL
C / CL	CENTERLINE	mm	MILLIMETER	SUPT	SUPPORT
CONC.	CONCRETE	MOD.	MODIFIED	SW	SWITCH, SPAN WIRE
CLSM	CONTROLLED LOW STRENGTH MATERIAL	MP	MILEPOST	TEMP.	TEMPERATURE
CSRI	CONCRETE REINFORCING STEEL INSTITUTE	MPH	MILES PER HOUR	T/F	TOP OF FOUNDATION
CU	COPPER	MW	MESSANGER WIRE	TOR	TOP OF RAIL
CW	CONTACT WIRE	N/A	NOT APPLICABLE	TSW	TRACK SWITCH
CWH	CONTACT WIRE HEIGHT	N	NORTH	TYP.	TYPICAL
DK. BRZ.	DARK BRONZE	NB	NORTHBOUND	UNC	UNIFIED COARSE THREAD
DIA.	DIAMETER	NBT	NORTHBOUND TRACK	V	VOLTS
DIM.	DIMENSION	NESC	NATIONAL ELECTRICAL SAFTEY CODE	VERT.	VERTICAL
DWG.	DRAWING	NO.	NUMBER	W/	WITH
EPR	ETHYLENE PROPYLENE RUBBER	NOC	NORMAL OPERATING CONDITIONS	WT	WEIGHT
EXSIT.	EXISTING	NOM.	NOMINAL	@	AT
°F	DEGREES FAHRENHEIT	NTS	NOT TO SCALE	&	AND
FDN	FOUNDATION	OC	OPERATING CONDITION	Ø	DIAMETER
FPO	FLYING PULLOFF	OCS	OVERHEAD CONTACT SYSTEM	°	DEGREES
FRE	FIBERGLASS REINFORCED EPOXY	OCSS	OCS SUPPORT	'	FOOT, FEET
FT	FOOT, FEET	OD	OUTSIDE DIAMETER	"	INCHES
FXT	FIXED TERMINATION	P	PLATE	+/-	PLUS/MINUS
GALV	GALVANIZED	PANTO	PANTOGRAPH		
GR.	GRADE	PO	PULLOFF		
HD	HEAD	PSI	POUNDS PER SQUARE INCH		
HDG	HOT-DIP GALVANIZED	QTY.	QUANTITY		
HEX	HEXAGONAL	REINF.	REINFORCED		
HORIZ.	HORIZONTAL	REQ'D	REQUIRED		
H.R.M.S.	HOT ROLLED MILD STEEL	REV	REVISION		
HSS	HOLLOW STRUCTURAL SECTION	RS	RULING SPAN		
HT	HEIGHT	RTRC	REINFORCED THERMOSETTING RESIN CONDUIT		
HR	HANGER	R/W / ROW	RIGHT OF WAY		
HRL	HIGH RAIL LINE				
ID	IDENTIFICATION				
IEEE	INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS				

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM GENERAL SYMBOLS AND ABBREVIATIONS	SCALE FOR 22"x34": NO SCALE		
			CHECKED BY	BP				The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	FILENAME: G032.dwg
			DRAWN BY	PFW									CONTRACT NO.: CONTRACT NO. ###
			CHECKED BY	BP									VOLUME: 1
			APPROVED BY	NKS									DRAWING NO.: SHEET NO.: G032 8
PLOT DATE: 12/21/2022			1:10:05 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION						

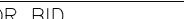
STANDARD SYMBOLS													
EXISTING UTILITIES				EXISTING TOPO				PROPOSED TRAFFIC SIGNAL					
ELEC OCS				FENCE		SANITARY MANHOLE		TRAFFIC SIGNAL HEAD					
ELEC OVERHEAD				FENCE		SIGN		TRAFFIC SIGNAL HEAD WITH BACK PLATE					
ELEC OVERHEAD HIGH VOLTAGE				ELEC MANHOLE		STORM INLET		PEDESTRIAN SIGNAL HEAD					
ELEC UNDERGROUND				FIBER MANHOLE		STORM MANHOLE		EXISTING SIGNAL HEAD					
ELEC UNDERGROUND HIGH VOLTAGE				GAS MANHOLE		TELEPHONE MANHOLE		MAST ARM POLE					
FIBER				GUY WIRE		TRAFFIC ITEMS		SIGNAL PEDESTAL					
SANITARY PIPE				HYDRANT		TRASH		COMBINED OCS POLE					
STEAM PIPE				LIGHT POLE		TREES		CONTROLLER					
STORM PIPES				METERS		VALVE		PULL BOX					
TELEPHONE LINE				OCS		WATER MANHOLE		EVP DETECTION UNIT					
WATERLINE				WELL				RADAR DETECTOR					
								SHOEBOX LUMINAIRE					
PROPOSED TRACK				PROPOSED STRIPING				PAN, TILT AND ZOOM CAMERA					
EXISTING TRACK ALIGNMENT				BROKEN LINE				SIGNS ON MAST ARM					
FUTURE TRACK ALIGNMENT				SOLID LINE				CONDUIT (BORED)					
TRACK ALIGNMENT AND TRACK SLAB				DOUBLE SOLID LINE				CONDUIT (TRENCHED)					
RIGHT-HAND TURNOUT				DOTTED LINE AND AUXILIARY LANE LINE				EXISTING POLE					
LEFT-HAND TURNOUT				SHARED LEFT TURN LINE				SIGNAL FACE NUMBER					
EQUILATERAL TURNOUT													
SAWCUT - ROADWAY				HATCH LINE									
STOP PLATFORM				PAVEMENT MARKING ARROWS									
PROPOSED OCS				STOP LINE									
OCS POLE				YIELD LINE									
OCS SPRING TENSIONNER				CROSSWALK OR BIKE CROSSING LINES BLOCK STYLE									
OCS STAGGER CIRCLE													
OCS SUPPORT ARM				CROSSWALK LINES PARALLEL STYLE FOR TINTED CONCRETE CROSSWALKS									
OCS TEMP LINE													
OCS WIRE													
OCS WIRE SUPPORT													
REV	DATE	DESCRIPTION	DESIGNED BY	MMO	ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION					
			CHECKED BY	JWR	HDR			STANDARD SYMBOLS					
			DRAWN BY	MMO	HDR Engineering, Inc.								
			CHECKED BY	JWR	10450 Holmes Road								
			APPROVED BY	NKS	Suite 600								
PLOT DATE: 12/23/2022			DATE		12-23-2022		NOT FOR CONSTRUCTION						

TRACTION POWER SYMBOLS

	DISCONNECT SWITCH IS NORMALLY CLOSED (NC), UNLESS DESIGNATED WITH (NO) NORMALLY OPEN		ANNUNCIATOR / HMI / SAS PLC		EXTERIOR LIGHT
	FUSED DISCONNECT SWITCH		AMMETER		GROUND
	LOW VOLTAGE CIRCUIT BREAKER		VOLTMETER		CHASSIS GROUND
	POTENTIAL TRANSFORMER		KILOWATT HOUR METER		EXIT SIGN WITH EMERGENCY LIGHT
	CURRENT TRANSFORMER		KILOVAR HOUR METER		EMERGENCY LIGHT
	RECTIFIER TRANSFORMER, 12 PULSE		AMMETER SWITCH		CABLE POTHEAD/CABLE CONNECTOR
	RECTIFIER TRANSFORMER, 6 PULSE OR POWER TRANSFORMER		KILOWATT METER		THREE-WAY LIGHT SWITCH
	INTERPHASE TRANSFORMER		SCADA		ELECTRICAL PHASE
	WYE, TRANSFORMER CONNECTION		EMERGENCY TRIP STATION		FIRE EXTINGUISHER
	DELTA, TRANSFORMER CONNECTION		CURRENT TRANSDUCER		PHOTOCELL
	SURGE ARRESTER		VOLTAGE TRANSDUCER		MULTI-MODE FIBER OPTIC
	TRACTION RECTIFIER		MECHANICAL KEY INTERLOCK		
	FUSE		UTILITY GROUND CONNECTION		
	DRAWOUT FUSE		INTERLOCK		
	SHUNT OR TPSS BUS CONNECTION		SMOKE DETECTOR		
	WITHDRAWABLE DC CIRCUIT BREAKER WITH SERIES TRIP UNIT		GFI RECEPTACLE		
	DIRECTION OF CONTROL OR RELAY INFLUENCE LINE		MH/HH/VAULT		
	DIODE		LIGHT FIXTURE		
	CONTACTOR		INSULATED OVERLAP (IOL)		
	WITHDRAWABLE MEDIUM VOLTAGE AC BREAKER		OCS SECTION INSULATOR (SI)		

DEVICE / FUNCTION REFERENCES

52	RELAY OPERATING COIL. INSIDE NUMBER DESIGNATES DEVICE FUNCTION. OUTSIDE NUMBER DESIGNATES QUANTITY OF DEVICES
5	EMERGENCY STOP PUSHBUTTON
26R1	RECTIFIER OVERTEMP ALARM (1ST. STAGE)
26R2	RECTIFIER OVERTEMP TRIP (2ND. STAGE)
27	UNDERVOLTAGE RELAY
30	INTERPOSING RELAY
32	REVERSE CURRENT RELAY
33A	AC CIRCUIT BREAKER REAR DOOR SWITCH
33F	FEEDER BREAKER REAR DOOR SWITCH
33N	NEGATIVE SWITCH DOOR OPEN
33P	POSITIVE SWITCH DOOR OPEN
33R	RECTIFIER DOOR SWITCH
33T	TRANSFORMER DOOR SWITCH
43	MANUAL TRANSFER OR SELECTOR DEVICE
47	PHASE SEQUENCE
49T1	TRANSFORMER OVERTEMP ALARM (1ST STAGE)
49T2	TRANSFORMER OVERTEMP TRIP (2ND STAGE)
50/51	PHASE FAULT TIME OVERCURRENT RELAY (INST. AND TIME DELAY)
50N/51N	GROUND FAULT TIME OVERCURRENT RELAY (INST. AND TIME DELAY)
52	AC CIRCUIT BREAKER
59	AC OVERVOLTAGE
59B	BANK PHASE OVERVOLTAGE
64GS	GROUNDING STRUCTURE
64HS	HOT STRUCTURE
64V	NEGATIVE-TO-EARTH VOLTAGE RELAY
76	DC DIRECT ACTING OVERCURRENT TRIP DEVICE
86	AC LOCKOUT RELAY
89P	DC POSITIVE DISCONNECT SWITCH
89N	DC NEGATIVE DISCONNECT SWITCH
98R1	R1 RECTIFIER DIODE FAILURE ALARM
98R2	R2 RECTIFIER DIODE FAILURE TRIP
148	DC INCOMPLETE SEQ. RELAY
150	DC INSTANTANEOUS OVERCURRENT RELAY
151	DC TIME OVERCURRENT RELAY
172	DC CIRCUIT BREAKER
182	DC LOAD MEASURING RELAY
183	DC RECLOSING RELAY
185	TRANSFER TRIP RELAY
186	DC LOCKOUT RELAY
R2G	RAIL-TO-GROUND SYSTEM
ROR	DC RATE OF RISE RELAY

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			CHECKED BY	PGL								
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PLOT DATE: 12/21/2022			5:18:39 PM		DATE 12/23/2022		NOT FOR CONSTRUCTION			TRACTION POWER TRACTION POWER SYMBOLS		

TRACTION POWER ABBREVIATIONS

A

A AMPERE
AM AMMETER
ANSI AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX APPROXIMATELY
A ANNUNCIATOR / SAS ALARM
AC ALTERNATING CURRENT / AC BREAKER
AS AMMETER SWITCH
AT CURRENT TRANSDUCER
AUX AUXILARY

B

BAL. BALANCE
BKR BREAKER
BLVD BOULEVARD

C

C CONDUIT
CB CIRCUIT BREAKER
CKT CIRCUIT
COMP COMPARATOR
CONN CONNECTION
CT CURRENT TRANSFORMER
CUB CUBICLE

D

DC DIRECT CURRENT
DR DUCTBANK/RACEWAY
DS DISCONNECT SWITCH

E

ELT EXTERIOR LIGHTS
ETS EMERGENCY TRIP STATION

F

F DC FEEDER BREAKER
FACP FIRE ALARM CONTROL PANEL
FX FAST ETHERNET

G

GFI GROUND FAULT INTERRUPTER
GL GREEN LIGHT
GND GROUND

H

HH HAND HOLE
HMI HUMAN MACHINE INTERFACE
HR HOUR
HTS HEAVY TRACTION SERVICE
HS HOT STRUCTURE
HVAC HEATING VENTING AND AIR CONDITIONING
HW HARDWIRE

I

ILT INTERIOR LIGHTS
INST. INSTANTANEOUS
I/O INPUT/OUTPUT
IOS INSULATED OVERLAP

K

K MECHANICAL KEY INTERLOCK
KCMIL THOUSANDS CIRCULAR MILS
KV KILOVOLT
KVA KILOVOLT AMPERE
KVAC KILOVOLT ALTERNATING CURRENT
KW KILOWATT

L

LMR LOAD MEASURING RESISTOR

M

MCB MAIN CIRCUIT BREAKER
MFPR MULTI-FUNCTION PROTECTION RELAY
MH MANHOLE
MOC MECHANISM OPERATED CONTACT

N

N NEGATIVE
NC NORMALLY CLOSED
NEG NEGATIVE
NO NORMALLY OPEN
NR NEGATIVE FEEDER

O

OCS OVERHEAD CONTACT SYSTEM

P

P, POS POSITIVE
PAC PROGRAMMABLE AUTOMATION CONTROLLER
PC PERSONAL COMPUTER
PF POSITIVE FEEDER
PSC PHOTOCELL SHORTING CAP
PSI POUNDS PER SQUARE INCH
PT POTENTIAL TRANSFORMER
PVC POLYVINYL CHLORIDE

R

R RECTIFIER
R2G RAIL-TO-GROUND SYSTEM
RL RED LIGHT
RT RECTIFIER TRANSFORMER
REV. REVERSE
ROR DC RATE OF RISE RELAY
RTU REMOTE TERMINAL UNIT

S

SAS SUBSTATION AUTOMATION SYSTEM
SC SIGNAL/COMMUNICATIONS
SCC STATION CONTROL CABINET
SCADA SUPERVISORY CONTROL AND DATA ACQUISITION
SD SMOKE DETECTOR
SFP SMALL FORM-FACTOR PLUGABLE
SEQ. SEQUENCE
SI SECTION INSULATOR
SPD SURGE PROTECTIVE DEVICE
STA STATIONING
SUMM SUMMARY ALARM (COMMON ALARM)

T

TB TERMINAL BLOCK
TBD TO BE DETERMINED
TD TIME DELAY
TE TRACTION ELECTRIFICATION
TOC TRUCK OPERATED CONTACT
TPD TRACTION POWER DUCTBANK
TPSS TRACTION POWER SUBSTATION
TRFY TRAFFICWAY
TT TRANSFER TRIP
TYP. TYPICAL

V

V VOLT
VM VOLTMETER
VAC VOLT ALTERNATING CURRENT
VDC VOLT DIRECT CURRENT
VT VOLTAGE TRANSDUCER

VT

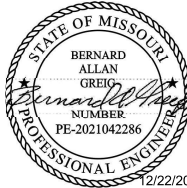
VAULT

W

W WATT
WL WHITE LIGHT
WT WEIGHT

NOTES:

1. SEE CITY OF KANSAS CITY STANDARD PLANS FOR ADDITIONAL ABBREVIATIONS.

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			DRAWN BY	JDW							CONTRACT NO.:			
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INSULATED JOINT, CIRCUITS ON BOTH SIDES

INSULATED JOINT, CIRCUITS ONLY TO THE RIGHT

INSULATED JOINT, CIRCUITS ONLY TO THE LEFT

POWER SWITCH MACHINE

POWERED DUAL CONTROL SWITCH MACHINE

TRAIN CONTROL HANDHOLE

TWC LOOP

TWC JUNCTION BOX

RAIL SIGNAL MOUNTED TO OCS POLE

RAIL SIGNAL

WAYSIDE SIGNAL

SPLICE POINT

RELAY CASE

SWITCH HEATER CASE

SIGNAL & COMMUNICATION CONDUIT

NEGATIVE RETURN/ SWITCH HEATER CONDUIT

SINGLE RAIL INSULATED JOINT WITH RAIL ACCESS BOXES

DOUBLE RAIL INSULATED JOINT WITH RAIL ACCESS BOXES

TRAFFIC SIGNAL CABINET

SIGNAL CABINET

INTERLOCKING RELAY CABINET

ITS FIBER OPTIC SPLICE VAULT

UNDERGROUND COMMUNICATIONS CONDUITS

A AMPHERE

AASHTO AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS

AC ALTERNATING CURRENT

ASTM AMERICAN SOCIETY FOR TESTING AND MATERIALS

AWG AMERICAN WIRE GAUGE

BOP BEGIN OF PLATFORM

C CONDUCTOR

CL CENTERLINE

CT COUNT

CU COPPER

DIA. DIAMETER

DIST DISTRIBUTION

DWG DRAWING

EA EACH

ELEC ELECTRIC

ELEV ELEVATION

EMP ELECTROMAGNETIC PULSE

EOP END OF PLATFORM

EX/ EXIST EXISTING

FDR FEEDER

FP FEEDER POLE

FRNT FRONT

GALV GALVANIZED

GRS GALVANIZED RIGID STEEL

HH HANDHOLE

HS HIGHWAY SEMI-TRAILER [TRUCK LIVE LOADINGS]

ID IDENTIFICATION

IJ INSULATED JOINT

IP INTERNET PROTOCOL

ITS INTELLIGENT TRANSPORATION SYSTEMS

JB JUNCTION BOX

KCATA KANSAS CITY AREA TRANSPORATION AUTHORITY

KCM THOUSANDS OF CIRCULAR MILS

KCMIL 1000 CIRCUIT MILS

KCMO KANSAS CITY, MISSOURI

KV KILO VOLTS

L LOOP

LCP LOCAL CONTROL PANEL

MH MANHOLE

MIN MINIMUM

MAX MAXIMUM

NB NORTHBOUND

NEMA NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

NO NUMBER

NTS NOT TO SCALE

PB PULL BOX

PLZA PLAZA STOP

POS POINT OF SWITCH

PR PROPOSED

PROP PROPOSED

PRSH PERSHING ROAD STOP

PSI POUNDS PERSQUARE INCH

PS POWER SWITCH

PVC POLYVINYAL CHLORIDE

Q QUANTITY

R RELAY END

RAB RAIL ACCESS BOX

RC RELAY CASE

RIVR RIVER

RTRC REINFORCED THERMOSETTING RESIN CONDUIT

R/W RIGHT OF WAY

S SIGNAL

SB SOUTHBOUND

SC SIGNAL & COMMUNICATION

SCH SCHEDULE

SH SWITCH HEATER

SIG SIGNAL

SMFO SINGLE MODE FIBER OPTIC CABLE

STA STATIONING

SW SWITCH

SWHTRC SWITCH HEATER CASE

T FEED END

TBD TO BE DETERMINED

TC TRAIN CONTROL

TE TRACTION ELECTRIFICATION

TPSS TRACTION POWER SUBSTATION

TR TRACK RELAY END

TT TRACK FEED END

TW TWISTED WIRE

TWC TRAIN TO WAYSIDE COMMUNICATION

TWPR TWISTED PAIR

TYP TYPICAL

UGFO UNDERGROUND FIBER OPTIC

UMH UTILITY MANHOLE

UNC UNIFIED THREAD STANDARD

VAC VOLTS ALTERNATING CURRENT

VMF VEHICLE MAINTENANCE FACILITY

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			DRAWN BY ZJ							CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY AJW							VOLUME: I	
			APPROVED BY NKS							DRAWING NO.: G038	
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GENERAL NOTES – KANSAS CITY STREETCAR

1.

ALL MATERIALS AND WORK REQUIRED FOR THE PROJECT SHALL CONFORM TO THE PROJECT SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS. SPECIFICATIONS NOTED ON THE PLAN SHEETS SHALL TAKE PRECEDENT OVER ANY PROJECT SPECIFICATIONS.
2.

RIGHT-OF-WAY LINES SHOWN ARE BASED ON RECORDED SURVEY INFORMATION ON RECORD WITH THE CITY OF KANSAS CITY AND JACKSON COUNTY.
3.

CONTRACTOR TO VERIFY VERTICAL CLEARANCES FROM THE PROPOSED TRACKS TO OVERHEAD FACILITIES (ELECTRIC, CABLE, TELEPHONE).
4.

ALL GRADIENTS ARE IN PERCENT UNLESS NOTED OTHERWISE.
5.

THE KANSAS CITY STREETCAR TRACK IS DESIGNED PER THE KANSAS CITY STREETCAR DESIGN CRITERIA.
6.

STATIONING SHOWN ON TYPICAL SECTIONS IS APPROXIMATE. ALL STATIONING REFERS TO NORTHBOUND TRACK, UNLESS NOTED OTHERWISE.
7.

GUIDELINES FROM THE AMERICAN RAILWAY ENGINEERING AND MAINTENANCE-OF-WAY ASSOCIATION’S (AREMA) “MANUAL FOR TRACK ENGINEERING”, LATEST EDITION, ARE USED FOR VARIOUS ASPECTS OF THE DESIGN.
8.

GUIDELINES FROM THE FHWA “MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES” (MUTCD), 2009 EDITION, AND KANSAS CITY PUBLIC WORKS STANDARD DRAWINGS, LATEST REVISION, ARE USED FOR VARIOUS ASPECTS OF THE DESIGN.
9.

TRACK PROFILES REPRESENT TOP OF RAIL PROFILE UNLESS NOTED OTHERWISE. WHERE APPLICABLE, SIDING TOP OF RAIL PROFILE SIMILAR.
10.

THE RAIL PROFILE IS ALWAYS CARRIED ON THE LOW RAIL THROUGH SUPERELEVATED HORIZONTAL CURVES AND SPIRALS.
11.

SUPERELEVATION IS ACCOMPLISHED BY MAINTAINING TOP OF INSIDE (LOW) RAIL AT PROFILE GRADE AND BY RAISING OUTSIDE (HIGH) RAIL AN AMOUNT EQUAL TO THE SUPERELEVATION.
12.

UTILITIES SHOWN ON THE PLAN SHEETS ARE BASED ON INFORMATION RECEIVED FROM MUNICIPALITIES, AGENCIES, AND PRIVATE COMPANIES. ALL EXISTING UTILITY LOCATIONS ARE APPROXIMATE AND REQUIRE FIELD VERIFICATION THROUGH POTHOLING AND FIELD SURVEY, WHICH IS CONSIDERED SUBSIDIARY TO THE WORK.
13.

TRACKS ON PLAN AND PROFILE DRAWINGS ARE INDICATED BY CENTERLINE OF TRACK. EXCEPT WHERE INDICATED, OFFSET DISTANCES FROM TRACK TO OTHER FACILITIES ARE MEASURED FROM CENTERLINE OF TRACK.
14.

SEE SHEETS K101, K102 AND K110 FOR STATIONING THROUGH TURNOUTS.
15.

TURNOUT HEADBLOCK TIES AND SWITCH MACHINES SHALL BE INSTALLED BETWEEN THE RAILS AT THE LOCATION LABELED AS PSW ON THE PLANS.
16.

CONTRACTOR TO REVIEW GEOTECHNICAL REPORT FOR EXISTING CONDITIONS.
17.

THE KANSAS CITY STREETCAR PROJECT IS FEDERALLY FUNDED; ALL MATERIALS MUST MEET BUY AMERICA REQUIREMENTS PER 49 CFR 661.
18.

THESE GENERAL NOTES ARE GENERAL IN NATURE AND PROJECTWIDE. ANY NOTES ON SPECIFIC SHEETS THAT ARE IN CONFLICT SUPERCEDE THESE GENERAL NOTES.
19.

CONTRACTOR TO PROVIDE INLET PROTECTION OF SEDIMENT AT ALL CURB INLETS WITHIN THE PROJECT LIMITS.
20.

ANYTHING FOUND UNDERGROUND (OLD TROLLEY TRACKS, ETC.) SHOULD BE RECOGNIZED.
21.

ALL SAWCUTTING SHALL BE FULL DEPTH.
22.

DURING CURB REMOVAL, IF A CURB TYPE IS FOUND TO BE DIFFERENT THAN THE TYPE SPECIFIED IN THE CIVIL SHEETS, CONTRACTOR WILL REPLACE CURB WITH EXISTING CURB TYPE.
23.

CONTRACTOR SHALL REVIEW PROJECT NEPA DOCUMENTS AND FINDING OF NO SIGNIFICANT IMPACT TO CONFIRM COMPLIANCE WITH TERMS OF THE PROJECT’S ENVIRONMENTAL COMMITMENTS.
24.

FOR LOCATIONS WHERE THE TEMPORARY ASPHALT OVERLAY REQUIRES WEDGING BELOW THE EXISTING PAVEMENT SURFACE, CONTRACTOR TO MILL VARIABLE DEPTH AND PLACE 1.5” MINIMUM OF TEMPORARY ASPHALT OVERLAY.
25.

MINIMUM DESIGN PIPE SIZE IS 12-INCH DIAMETER, NOT INCLUDING LATERAL DRAINS FROM TRACK EQUIPMENT.

GENERAL NOTES – RAILROAD

1.

ANY SHORING SYSTEM THAT IMPACT THE RAILROAD OPERATIONS AND/OR SUPPORTS RAILROAD EMBANKMENT SHALL BE DESIGNED AND CONSTRUCTED PER THE RAILROAD TEMPORARY SHORING REQUIREMENTS.
2.

ALL DEMOLITION WITHIN THE RAILROAD RIGHT-OF-WAY AND/OR DEMOLITION THAT MAY IMPACT THE RAILROAD TRACKS OR OPERATIONS SHALL COMPLY WITH THE RAILROAD DEMOLITION REQUIREMENTS.
3.

ERECTION OVER THE RAILROAD RIGHT-OF-WAY SHALL BE DESIGNED TO CAUSE NO INTERRUPTION TO ALL RAILROAD OPERATIONS.
4.

THE ELEVATION OF THE EXISTING TOP-OF-RAIL PROFILE SHALL BE VERIFIED BEFORE BEGINNING CONSTRUCTION. ALL DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE RAILROAD PRIOR TO CONSTRUCTION.
5.

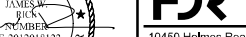
THE PROPOSED GRADE SEPARATION PROJECT SHALL NOT CHANGE THE QUANTITY AND/OR CHARACTERISTICS OF THE FLOW IN THE RAILROAD DITCHES AND/OR DRAINAGE STRUCTURES.
6.

THE CONTRACTOR MUST SUBMIT A PROPOSED METHOD OF EROSION AND SEDIMENT CONTROL AND HAVE THE METHOD APPROVED BY THE RAILROAD PRIOR TO BEGINNING ANY GRADING ON THE PROJECT SITE.
7.

FOR RAILROAD COORDINATION PLEASE REFER TO THE RAILROAD’S COORDINATION REQUIREMENTS AS PART OF THE SPECIFICATIONS OR SPECIAL PROVISIONS OF THE PROJECT.
8.

TEMPORARY CONSTRUCTION CLEARANCES, INCLUDING FALSEWORK CLEARANCES, SHALL COMPLY WITH FIGURE 1 IN “UNION PACIFIC RAILROAD – BNSF RAILWAY JOINT GUIDELINES FOR RAILROAD GRADE SEPARATION PROJECTS”
9.

ALL PERMANENT CLEARANCES SHALL BE VERIFIED BEFORE PROJECT CLOSE OUT.

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			APPROVED BY	NKS									
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GENERAL NOTES:

1. CONSTRUCT NEW OCS AS SHOWN ON LAYOUT PLANS AND DETAIL DRAWINGS.
2. CONTACT WIRE HEIGHT MAY VARY AT SUPPORTS. MINIMUM CONTACT WIRE HEIGHT AT MIDDLE OF SPAN OVER STREETS AND PUBLIC THOROUGHFARES TO BE 18'-0" UNDER WORST SAG CONDITIONS WITH 1/2" RADIAL ICE UNLESS NOTED OTHERWISE. CONTACT WIRE OVER THE GRAND BOULEVARD BRIDGE TO BE 18'-0" UNDER WORST SAG CONDITIONS WITH 1/2" RADIAL ICE.
3. ALL DIMENSIONS GIVEN IN FEET AND INCHES UNLESS STATED OTHERWISE.
4. SPAN WIRE AND BRACKET ARM HEIGHTS ON POLES MAY REQUIRE ADJUSTMENT AFTER INSTALLATION TO OBTAIN PROPER CONTACT WIRE HEIGHT OR ARRANGEMENT FIT.
5. CONTACT WIRE DEADENDS ARE TO BE PLACED OUTSIDE OF THE TRACK GAUGE AT A MINIMUM DISTANCE OF 5'-0" FROM THE CENTER LINE OF TRACK TO PROVIDE ADEQUATE CLEARANCE FOR PANTOGRAPH.
6. ALL CABLE RISERS AND FEEDER TAPS SHALL CONNECT TO THE CONTACT WIRE THROUGH A DISCONNECT SWITCH AT THE POLE.
7. SURGE ARRESTORS SHALL BE INSTALLED AT ALL FEEDER CABLE RISERS. ARRESTERS SHALL BE INSTALLED AND ATTACHED TO THE CONTACT WIRE WHERE THE DISTANCE BETWEEN ARRESTORS IS 1,000 FEET.
8. FOR BILL OF MATERIALS, SEE INDIVIDUAL DETAIL DRAWINGS. FOR OVERHEAD ASSEMBLY DETAILS, SEE ASSEMBLY DETAIL DRAWINGS. BILL OF MATERIALS ARE NOT ALL INCLUSIVE. CONTRACTOR TO ENSURE OCS ASSEMBLIES ARE COMPLETE, FIT CORRECTLY, AND WILL PROVIDE PROPER OPERATION FOR PANTOGRAPHS.
9. CONTACT WIRE SHALL BE PRE-STRESSED BY TENSIONING THE WIRE TO A VALUE THAT IS 15% GREATER THAN THAT OF THE PRESCRIBED INSTALLATION TENSION. THE PRESCRIBED INSTALLATION TENSION VALUE SHALL BE DETERMINED BY USING INSTALLATION TENSION CHART PROVIDED WITHIN THE CONTRACT DRAWINGS. ONCE THE WIRE IS PRE-STRESSED, THE TENSION WITHIN THE WIRE MAY BE REDUCED DOWN TO THE PRE-DETERMINED INSTALLATION TENSION VALUE AND CLIPPED INTO PLACE.
10. WHERE NO SPECIFIC MANUFACTURER IS LISTED FOR AN ITEM, THE CONTRACTOR MAY CHOOSE THE MANUFACTURER SO LONG AS THE ITEM IS DESCRIBED WITHIN THE CONTRACT DOCUMENTS. WHERE THREE SUPPLIERS ARE LISTED FOR SPECIFIC HARDWARE, ANY ONE OF THOSE THREE SUPPLIERS MAY BE USED. WHEREVER A SPECIFIC MANUFACTURER IS LISTED FOR AN ITEM, THE CONTRACTOR SHALL SUPPLY EITHER THAT SPECIFIC ITEM OR AN AS EQUAL COMPONENT APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION THAT THE AS EQUAL COMPONENT CONFORMS TO FORM, FIT, FUNCTION AND WEIGHT OF THE SPECIFIED ITEM. THE CONTRACTOR SHALL PURCHASE OCS HARDWARE FROM MULTIPLE SOURCES TO ACHIEVE PRODUCT REQUIREMENTS. ALL SHOP DRAWINGS SHALL STATE THE ORIGINAL MANUFACTURER'S NAME AND PART NUMBER OF EACH COMPONENT SUBMITTED FOR ALL MATERIAL INCLUDING MATERIAL NOT MANUFACTURED BY THE SUPPLIER OF THE COMPONENT. ALL OCS MATERIAL SHALL BE OBTAINED FROM A WHOLLY OWNED AMERICAN COMPANY AND MUST MEET BUY AMERICA REQUIREMENTS AND SUBMIT PROOF OF SUCH.
11. CONTRACTOR SHALL DETERMINE FINAL HEIGHTS OF SPAN WIRES, AND BRACKET ARMS AND MAKE ALL ADJUSTMENTS REQUIRED TO HAVE A FULLY FUNCTIONAL INCLINED PENDULUM SUSPENSION SYSTEM FOR SINGLE CONTACT WIRE WITH TIME PROVEN HARDWARE. TIME PROVEN HARDWARE AND COMPONENTS SHALL BE THAT MATERIAL THAT HAS BEEN IN SERVICE ON A TRANSIT SYSTEM FOR A MINIMUM OF TEN YEARS.
12. POLE FOUNDATION DIAMETERS MAY VARY ACCORDING TO LOCATION FOR UTILITY CLEARANCE OR STRENGTH REQUIREMENTS. ABANDONED PIPE, CONCRETE, BOULDERS, AND ANY OTHER OBSTRUCTIONS WHICH EXTEND INTO THEIR FOUNDATION SHAFT AND PREVENT THE PROPER FORMATION OF THE FOUNDATION SHALL BE RECOGNIZED AS UNCLASSIFIED EXCAVATION AND SHALL BE REMOVED. THE PERMANENT UTILITY LINES AND PIPING WHICH ARE INTERFERED BY THE FOUNDATION SHAFT SHALL BE BROUGHT TO THE ENGINEER'S ATTENTION. ALL FOUNDATION HOLES SHALL BE HAND EXCAVATED FOR THE FIRST THREE FEET USING HAND TOOLS OR VACUUMING EQUIPMENT WHERE UTILITIES ARE IN CLOSE PROXIMITY. SHOULD UTILITIES OR OBSTRUCTIONS BE ENCOUNTERED, THE CONTRACTOR SHALL READJUST THE POLE LOCATION NO GREATER THAN THREE FEET BEFORE TAKING DIRECTION FROM THE ENGINEER.
13. THE NATIONAL ELECTRICAL SAFETY CODE (NEC) SHALL GOVERN ALL ASPECTS OF THE OCS.
14. POLE FOUNDATIONS WILL BE EMBEDDED BELOW GRADE WHEN INSTALLED ON ALL CITY STREET SIDEWALKS UNLESS NOTED OTHERWISE.
15. EMBEDDED BASE FOUNDATIONS TO HAVE INTERIOR REINFORCING CAGE AS SHOWN ON THE FOUNDATION DETAIL DRAWINGS. SURGE ARRESTER GROUND WIRES SHALL NOT BE ATTACHED TO THE REINFORCING CAISSON BUT RUN TO A SEPARATE GROUND ROD OUTSIDE OF THE FOUNDATION. THE STEEL FOUNDATION CAISSON MAY BE USED AS THE POLE GROUND ELECTRODE WHEN GROUND RODS CANNOT BE INSTALLED DUE TO UTILITY OR OTHER CONFLICTS. ALL ARRESTER GROUNDS SHALL BE SEPARATE FROM POLE GROUNDS AND SHALL TERMINATE AT A GROUND ROD OR MULTIPLE GROUND RODS.
16. SURGE ARRESTER GROUND WIRES SHALL NOT BE PLACED INSIDE OCS POLES, TRAFFIC SIGNAL POLES, STREETLIGHT POLES OR OVERLAP POLES. INSTEAD THESE ELEMENTS SHALL BE LOCATED ON THE OUTSIDE OF THE POLE AND RUN IN HEAVY WALL PHENOLIC CONDUIT AS SHOWN ON THE CONTRACT DRAWINGS. WHERE FEEDER TAPS MUST BE LOCATED ON TRAFFIC SIGNAL, STREETLIGHT, OR OVERLAP POLES, THE FEEDER CABLE SHALL BE RUN IN AN EXTERIOR HEAVY WALL PHENOLIC CONDUIT ATTACHED TO THE OUTSIDE OF THE POLE. FEEDER POLES CABLES SHALL BE EQUIPPED WITH SURGE ARRESTORS FOR EACH CABLE.
17. CONSTANT TENSIONED SPRING DEVICES SHALL BE USED TO APPLY CONSTANT TENSION IN SINGLE CONTACT WIRES. REFER TO TENSION CHART DRAWINGS FOR TENSIONS VALUES. TENSION LENGTHS SHALL RUN SPRING TO SPRING WITH MID-POINT ANCHORS AS INDICATED IN THE LAYOUT PLANS. THE MAXIMUM HALF TENSION LENGTH SHALL BE 1,500 FEET AND THE MAXIMUM WIRE RUN BETWEEN SPRINGS OR DEADENDS SHALL BE 3,000 FEET. IF GREATER, TAKE DIRECTION FROM THE ENGINEER.
18. THE RAKE OF POLE IS THE ANGLE OF DEVIATION FROM THE VERTICAL AXIS IN THE OPPOSITE DIRECTION OF THE APPLIED RESULTANT LOAD. THIS IS DONE SO THAT WHEN THE LOAD IS APPLIED AND THE POLE HAS DEFLECTED IT WILL APPEAR STRAIGHT. POLES SHALL BE RAKED IN THE DIRECTION OF THE RESULTANT MOMENT ARROW SHOWN ON THE PLANS BY AN AMOUNT NOT TO EXCEED 6 INCHES IN 24 FEET IF NO RAKE VALUE IS PROVIDED.
19. ALL SWITCH BOX ENCLOSURES WITH TRACTION POWER SUBSTATION FEEDERS ARE TO HAVE IDENTIFICATION TAGS. TAGS ARE TO BE ADHESIVELY APPLIED TO THE ENCLOSURES AND SHALL BE REFLECTIVE WITH WHITE NUMBERS MEASURING 2 INCHES HIGH ON A BLACK BACKGROUND. TAGS SHALL BE LOCATED ON THE BOX DOOR. NUMBERING SYSTEM TO BE AS SHOWN IN PLANS. FIRST NUMBER IS TRACTION POWER SUBSTATION AND SECOND NUMBER IS BOX NUMBER. ALL FEEDER CABLES RISING OUT OF FEEDER POLES TO THE OCS SHALL HAVE THEIR CIRCUIT NUMBER IDENTIFIED WITH A CABLE TAG. ALL FEEDER CABLES RUNNING INTO DISCONNECT SWITCHES SHALL HAVE THE CABLE NUMBER ATTACHED TO IT AT THE SWITCH.
20. CONTRACTOR SHALL COORDINATE INSTALLATION OF OCS POLES, FOUNDATIONS, AND WIRES WITH ALL OTHER WORK.
21. CONTACT WIRES ARE TO BE PLACED ON SEPARATE POWER SECTIONS BETWEEN SUBSTATIONS THROUGH THE USE OF SECTION INSULATORS AS SHOWN ON THE LAYOUT DRAWINGS. SECTION INSULATORS ARE TO BE BRIDGING TYPE SAME AS USED ON THE STARTER LINE AND MAIN STREET SOUTH EXTENSION.
22. WHERE SIGN VISIBILITY IS PREVENTED DUE TO POLE LOCATION, ATTACHED SIGN TO OCS POLE. FOR EXISTING SIGNS TO BE PLACED ON OCS POLE, REMOVE EXISTING SIGN POST AFTER INSTALLATION OF SIGN.
23. CONTRACTOR TO COORDINATE GRAND BOULEVARD BRIDGE DRAINAGE AND ELECTRICAL SYSTEMS ON BRIDGE PIERS WITH NEW OCS POLE SUPPORT BRACKETS TO PREVENT CONFLICTS. DRAINAGE AND ELECTRICAL CONDUITS TO BE MOVED OR RELOCATED AS NEEDED FOR OCS POLE BRACKET INSTALLATION.
24. POLE CLAMPS ARE MEASURED FROM TOP OF RAIL.

INSTALLATION PROCEDURE FOR OCS:

1. INSTALL FOUNDATIONS AND POLES WHERE INDICATED ON THE LAYOUT PLANS. POLE HOLES ARE TO BE EXCAVATED BY HAND WITH SPOON AND SPADE SHOVELS OR VACUUM METHOD ALONG CITY STREETS OR WHERE UTILITIES ARE IN CLOSE PROXIMITY. MACHINERY SUCH AS AUGERS AND BACK HOES SHALL NOT BE USED WHERE UTILITIES ARE CLOSE TO THE FOUNDATION OR UNKNOWN. FOUNDATION DIAMETERS MAY HAVE TO BE REDUCED TO CLEAR UTILITY OBSTRUCTIONS OR UTILITY MOVED IN THE HOLE OUT OF THE WAY TO CLEAR THE POLE AND CONCRETE. CONTRACTOR TO OBTAIN DIRECTION FROM THE ENGINEER WHEN OBSTRUCTIONS ARE ENCOUNTERED OR IF FOUNDATION DIAMETER NEEDS TO BE REDUCED. WHERE POLE LOCATION CANNOT BE MOVED TO CLEAR AN OBSTRUCTION.
2. CONCRETE SIDEWALKS WHERE POLES ARE TO BE PLACED SHALL BE SAW CUT AND REMOVED TO EXPOSE EARTH. UPON COMPLETION OF POLE AND FOUNDATION INSTALLATION, THE SIDEWALK AND ALL OTHER AREAS SHALL BE RESTORED TO ORIGINAL CONDITION. ALL EXCESS CONCRETE, DEMOLISHED MATERIAL, AND EXCAVATED EARTH SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED IN ACCORDANCE WITH THE SPECIFICATIONS. SPILLED CONCRETE SHALL BE CLEANED OFF STRUCTURES AND SIDEWALKS.
3. PLACE POLE CLAMPS ON POLES AT SPECIFIED HEIGHTS. ADJUST VERTICALLY AS REQUIRED.
4. ASSEMBLE SPAN NETWORK AERIALLY AND ATTACH TO POLE CLAMPS, MAKE ADJUSTMENTS AND PULL TIGHT WITH BLOCK AND TACKLE. AFTER ALL SPANS ARE HUNG AND PULLED TIGHT, ATTACH PULLOVER ASSEMBLIES TO SPAN WIRES. MAKE FINAL ADJUSTMENTS TO HEIGHT AFTER OVERHEAD IS COMPLETELY INSTALLED.
5. FLYING PULLOVERS CAN HANG ON POLES AND THEN BE PULLED UP OR BE SUPPORTED TEMPORARILY WITH LIGHT LINE SO THE CONTACT WIRE CAN BE ATTACHED DURING THE STRINGING PROCESS.
6. LINE INSULATORS CAN BE CLAMPED TO THE SPANS WITH PULLOVERS ATTACHED AND PULLOVER RODS LIFTED UP AND TEMPORARILY TIED TO THE SPAN. CLAMP EARS SHOULD BE ATTACHED PRIOR TO HANGING PULLOVERS AND SHOULD BE LOCATED DIRECTLY OVER THE MARKS MADE ON THE TRACKS. THE CLAMP EAR SHALL BE ORIENTED SO THAT THE EAR BODY IS ON THE INSIDE OF THE CURVE.
7. ATTACH ROLLERS OR APPROPRIATE WIRE STRING DEVICES TO THE SPAN WIRES OR BRACKET ARMS FOR STRINGING CONTACT WIRE.
8. WHEN ALL SPAN SUPPORTS ARE HUNG, ATTACH CONTACT WIRE AT POLE TO A TEMPORARY DEADEND, RUN WIRE OUT ALONG TRACKS AND PLACE THE WIRE INTO THE ROLLERS OR OTHER APPROPRIATE DEVICES AND TERMINATE TO THE OTHER DEADEND POLE IN A TEMPORARY DEADEND. CROSSOVER WIRES ARE TO BE RUN FIRST AS THEY ARE TO BE OVER THE MAIN LINE WIRE.
9. AFTER SECURING THE CONTACT WIRE IN THE DEADEND, FOLLOW THE GROOVE FROM ONE DEADEND TO THE OTHER AND TWIST AS NEEDED TO KEEP THE GROOVE STRAIGHT UP BEFORE CLAMP ING INTO THE CLAMP EARS. THERE SHALL NOT BE ANY ROLLS IN THE CONTACT WIRE FROM DEADEND TO DEADEND. AFTER INSTALLATION, PRE-TENSION THE CONTACT WIRE AS SHOWN ON WIRE TENSION CHART AND SLACK OFF TO 2,480 LBS.
10. AFTER PRE-TENSIONING WIRE AND LOWERING TENSION TO 2,480 LBS., CONNECT CONTACT WIRE TO SPRING TENSIONER AND PULL UP UNTIL THE SPRING TAKES THE LOAD ON THE WIRE. FINISH THE INSTALLATION ACCORDING TO THE MANUFACTURER'S RECOMMENDED INSTALL PROCEDURE.
11. WHEN ALL WIRES HAVE BEEN INSTALLED, TENSIONED, TERMINATED PROPERLY, AND CLIPPED IN, CHECK CONTACT WIRE OFFSET AND MAKE ADJUSTMENTS AS NEEDED. CHECK THAT THE GROOVE OF THE CONTACT WIRE IS UP STRAIGHT WITH NO ROLLS OR TWISTS. MAKE CORRECTIONS IF NEEDED.
12. INSTALL CROSS CONTACT WIRE CLAMPS. CHECK WIRE HEIGHT AND ADJUST POLE CLAMPS AS NEEDED OR PULL UP ON SPAN WIRES.
13. ON SPRING TENSION DEVICES CHECK CAM ROTATION TO CORRECT POSITION PER MANUFACTURER'S RECOMMENDATION FOR THE GIVEN TENSION LENGTH AND TEMPERATURE.
16. INSTALL ALL FEEDER TAPS, JUMPERS, EQUALIZERS, DISCONNECT SWITCHES, SURGE ARRESTERS, GROUND WIRES AND ALL OTHER ASSEMBLIES, APPURTENANCES AND DEVICES TO COMPLETE THE OCS.
17. CONTRACTOR MAY HAVE ALTERNATIVE METHODS AND PROCEDURES FOR INSTALLING FOUNDATIONS, POLES AND OCS, AND THIS PROCEDURE LISTED IS A SUGGESTED GUIDE.
18. AFTER THE OCS INSTALLATION IS COMPLETE, CHECK STAGGERS, OFFSETS, AND CONTACT WIRE HEIGHTS.
19. WHEN THE OCS IS COMPLETE AND ACCEPTED, ELECTRICAL TESTING MAY COMMENCE. UPON SUCCESSFUL COMPLETION OF THE ELECTRICAL TESTING, THE LINE MAY BE ENERGIZED AT THE DIRECTION OF THE ENGINEER. AFTER ALL TESTS HAVE BEEN COMPLETED AND THE LINE ENERGIZED AND ALL TRACK AND STRUCTURES HAVE BEEN ACCEPTED, RUN A STREETCAR ALONG THE LINE TO CHECK THE PANTOGRAPH CLEARANCES, OFFSETS/STAGGERS AND PERFORMANCE. REFER TO THE SPECIFICATIONS FOR TESTING PROCEDURES.
20. CONTRACTOR TO DETERMINE METHOD FOR INSTALLING NEW POLES, SPAN WIRES, AND CONTACT WIRES WHERE EXISTING OCS IS IN PLACE. NEW CONSTRUCTION SHALL NOT IMPACT EXISTING OPERATIONS AND THE CONTRACTOR SHALL COORDINATION WITH KCS. THIS MAY REQUIRE WORKING DURING NIGHT HOURS WHEN THEIR IS NO STREETCAR OPERATION AND THE OCS CAN BE DE-ENERGIZED.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM GENERAL NOTES	SCALE FOR 22"x34": NO SCALE		
			CHECKED BY	BP			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270			FILENAME: G041.dwg		
			DRAWN BY	PFW							CONTRACT NO.: CONTRACT NO. ###		
			CHECKED BY	BP							VOLUME: 1		
			APPROVED BY	NKS							DRAWING NO.: SHEET NO.:		
PLOT DATE: 12/21/2022			1:10:31 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION				G041	14	

STRUCTURAL STEEL NOTES:

1.

ALL STRUCTURAL STEEL SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE MANUAL OF STEEL CONSTRUCTION (AISC) AND THE PROJECT SPECIFICATIONS AT TIME OF AWARD. ALL STRUCTURAL STEEL MUST MEET BUY AMERICA REQUIREMENTS.
2.

SHOP DRAWINGS, SHOWING ALL FABRICATION DIMENSIONS, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO ANY FABRICATION.
3.

MATERIALS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS UNLESS NOTED ON THE DRAWINGS:

CHANNELS & ANGLES

ASTM A36

STRUCTURAL PIPE

ASTM A53, TYPE E OR S, GR. B

STRUCTURAL TUBING

ASTM A500, GR. B

PLATES LESS THAN 3/8" THICK

ASTM A572, GR. 50

PLATES GREATER THAN 3/8" THICK

ASTM A572, GR. 50

COMMON BOLTS

ASTM A307, GR. A (GALV)

HIGH STRENGTH BOLTS

ASTM A325, TYPE 1 (GALV)

ANCHOR BOLTS

ASTM F1554, GR. 55

CANTILEVER PIPE

ASTM A53, TYPE E OR S, GR. B
4.

ALL STRUCTURAL AND MISCELLANEOUS STEEL, UNLESS OTHERWISE NOTED, SHALL BE GALVANIZED IN ACCORDANCE WITH THE CURRENT ISSUE OF ASTM A123 AND ASTM A153.
5.

ALL COMMON BOLTS, HIGH STRENGTH BOLTS, AND ANCHOR BOLTS ARE TO BE GALVANIZED OR STAINLESS STEEL AND SHALL BE UNIFIED AMERICAN THREAD WHERE APPLICABLE UNLESS NOTED OTHERWISE.
6.

ALL CONNECTIONS SHALL BE EITHER SHOP BOLTED, FIELD BOLTED OR SHOP WELDED, UNLESS SHOWN ON THE DESIGN DRAWINGS. FIELD WELDING IS NOT PERMITTED EXCEPT IN LIMITED CASES OF THE ATTACHMENT OF CATENARY POLES TO RETAINING WALLS OR NOISE WALLS AND ONLY WITH PERMISSION AND DIRECTION OF THE ENGINEER. SEE STRUCTURAL STEEL NOTE 12 BELOW FOR THE REQUIREMENTS OF FIELD WELDING. ALL BOLTED CONNECTIONS SHALL BE MADE WITH AN ASTM A325, TYPE 1, HEAVY HEXAGONAL BOLT IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS UNLESS OTHERWISE NOTED. SECONDARY CONNECTIONS (CANTILEVER ASSEMBLY, BALANCE WEIGHT ASSEMBLY, AND POLE CONNECTIONS) MAY BE MADE USING 3/4" DIAMETER ASTM A307 BOLTS WITH COMPATIBLE NUTS AND WASHERS.
7.

ALL HIGH STRENGTH BOLTED CONNECTIONS SHALL BE INSTALLED WITH GALVANIZED WASHERS AND NUTS AND FULLY PRE-TENSIONED IN ACCORDANCE WITH AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS.
8.

STRUCTURAL BRACING CONNECTIONS SHALL BE MADE WITH A MINIMUM OF 2 BOLTS IN DOUBLE SHEAR OR 4 BOLTS IN SINGLE SHEAR UNLESS OTHERWISE NOTED.
9.

WORK POINT ELEVATIONS FOR BRACING SHALL BE LOCATED AT THE CENTERLINE OF THE BEAMS OR COLUMNS THEY CONNECT TO UNLESS OTHERWISE NOTED.
10.

UNLESS OTHERWISE SHOWN ON THE DRAWINGS, HIGH STRENGTH BOLTED JOINTS SHALL BE BEARING TYPE CONNECTIONS WITH BOLT THREADS INCLUDED IN THE SHEAR PLANE (N-TYPE).
11.

WELDING SHALL CONFORM TO THE CURRENT EDITION OF THE AMERICAN WELDING SOCIETY'S (AWS) D1.1 STRUCTURAL WELDING CODE-STEEL. WELD FILLER METAL SHALL MEET THE APPLICABLE REQUIREMENTS OF AWS A5.1 TO A5.30 WITH A MINIMUM TENSILE STRENGTH OF 70 KSI (E70XX).
12.

EXISTING STEEL SURFACES TO BE WELDED SHALL BE CLEAN AND FREE FROM OIL, SCALE, SLAG, GREASE, GALVANIZING AND OTHER FOREIGN MATERIAL THAT IS DETRIMENTAL TO WELDING. PAINT SHALL BE REMOVED A MINIMUM OF 4" FROM THE SURFACE TO BE WELDED. AFTER WELDING, ALL SURFACES SHALL BE CLEANED AND ARE TO BE PAINTED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
13.

BOLTS FOR POLE BASE ANCHOR BOLTS SHALL BE TIGHTENED BY TURN OF THE NUT METHOD PER AISC UNLESS OTHERWISE NOTED.

CONCRETE NOTES:

1.

UNLESS OTHERWISE NOTED, DESIGN, MATERIAL, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND THE CURRENT EDITION OF THE FOLLOWING STANDARDS:

- MISSOURI STATE BUILDING CODE

- ACI 229R CONTROLLED LOW STRENGTH MATERIAL

- ACI 305 HOT WEATHER CONCRETING

- ACI 306 COLD WEATHER CONCRETING

- ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

- ACI 336.3R DESIGN AND CONSTRUCTION OF DRILLED PIERS

- SP66 ACI DETAILING MANUAL

- CRSI RECOMMENDED PRACTICE FOR PLACING REINFORCING STEEL
2.

SHOP DRAWINGS, SHOWING ALL FABRICATION DIMENSIONS AND LOCATIONS FOR PLACING OF THE REINFORCING STEEL AND ACCESSORIES, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO ANY FABRICATION.
3.

ALL CONCRETE SHALL BE NORMAL WEIGHT AND HAVE THE FOLLOWING MINIMUM STRENGTH UNLESS NOTED OTHERWISE:

FLOWABLE FILL CONCRETE-POLES.....

150 PSI @ 28 DAYS

LEAN CONCRETE FOR FILL.....

1000 PSI @ 28 DAYS

CONCRETE POURS 3 FT OR THICKER.....

4000 PSI @ 28 DAYS

ALL OTHER CONCRETE.....

4000 PSI @ 28 DAYS
4.

REINFORCING STEEL

A.

REINFORCING STEEL SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615, GRADE 60, EXCEPT AS NOTED.

B.

WELDED WIRE FABRIC (MESH) SHALL CONFORM TO ASTM A185 AND SHALL BE PROVIDED IN FLAT DRAWINGS (ROLLS NOT PERMITTED).

C.

TIE ALL REINFORCING STEEL AND EMBEDMENTS SECURELY IN PLACE PRIOR TO PLACING CONCRETE. PROVIDE SUFFICIENT SUPPORTS TO MAINTAIN THE POSITION OF REINFORCEMENT WITHIN SPECIFIED TOLERANCES DURING ALL CONSTRUCTION ACTIVITIES. "PLACING" DOWELS INTO WET CONCRETE IS NOT PERMITTED.

D.

REINFORCING STEEL SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH ACI 315 "DETAILS AND DETAILING CONCRETE REINFORCEMENT". REINFORCING STEEL MUST MEET BUY AMERICA REQUIREMENTS.

E.

UNDIMENSIONED HOOKS AT ENDS OF REINFORCEMENT AND STIRRUPS SHALL BE STANDARD HOOKS IN ACCORDANCE WITH ACI 318 UNLESS NOTED.
5.

SPLICES

A.

REINFORCING STEEL SHALL BE SPLICED AS INDICATED ON THE PLANS OR AS APPROVED BY THE ENGINEER.

B.

SPLICES NOT DEFINED ON DESIGN DRAWINGS SHALL BE LAPPED IN ACCORDANCE WITH ACI 318 CHAPTER 12 FOR CLASS B SPLICES AND MISSOURI STATE BUILDING CODE.
6.

CONCRETE PROTECTION FOR REINFORCEMENT (CAST-IN-PLACE)

A.

DO NOT WELD OR TACK WELD REINFORCING STEEL UNLESS APPROVED OR DIRECTED BY THE ENGINEER.

B.

ALL REINFORCING STEEL SHALL BE FREE FROM LOOSE RUST, SCALE OR ANY FOREIGN MATERIAL PRIOR TO PLACING ANY CONCRETE.

C.

INSTALL DRILLED AND DOWELED REINFORCING STEEL USING ADHESIVE ANCHORING SYSTEM, IN CURED CONCRETE UNLESS OTHERWISE NOTED. EMBED TO MANUFACTURER'S DEPTH UNLESS OTHERWISE NOTED.
7.

GENERAL

A.

ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1", 45° CHAMFER, EXCEPT AS NOTED.

B.

CONCRETE WORK SHALL BE IN ACCORDANCE WITH PROJECT SPECIFICATION FOR PLACING CONCRETE AND REINFORCING STEEL.

C.

TOP OF CONCRETE FOUNDATION SHALL BE CROWNED WITH A 2% SLOPE EXCEPT WHERE NOTED.

D.

MAXIMUM AGGREGATE SHALL BE NO GREATER THAN 3/4".
8.

ELECTRICAL GROUNDING

A.

REINFORCING STEEL SHALL NOT BE CONNECTED TO POLES OR SURGE ARRESTERS AND ALL ARRESTERS AND POLE GROUNDS SHALL BE ISOLATED FROM REINFORCING STEEL.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM STRUCTURAL STEEL AND CONCRETE NOTES		SCALE FOR 22"x34": NO SCALE FILENAME: G042.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: SHEET NO.: G04215	
			CHECKED BY	BP											
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			APPROVED BY	NKS											
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GENERAL NOTES:

1. ALL DIMENSIONS AND LOCATIONS OF EXISTING STRUCTURES AND SITE SURVEY SHOWN ON THE CONTRACT PLANS ARE APPROXIMATE. THE CONTRACTOR SHALL FIELD VERIFY DIMENSIONS PRIOR TO CONSTRUCTION.
2. EXPOSED CONDUIT RUNS ARE SHOWN APPROXIMATE ONLY. EXACT RUNS SHALL BE DETERMINED IN THE FIELD TO SUIT SITE CONDITIONS.
3. EXPOSED CONDUITS SHALL BE SUPPORTED AT APPROX. 6'-0" INTERVALS. MAXIMUM INTERVAL NOT TO EXCEED 10'-0", OR PER MANUFACTURER RECOMMENDATIONS.
4. AT EQUIPMENT ENCLOSURES, CONDUIT SHALL BE TERMINATED WITH 2-LOCKNUTS AND BUSHINGS OR GASKETED CONDUIT HUB PLATES OUTDOORS, EXCEPT WHERE ENCLOSURES ARE FURNISHED WITH INTEGRAL THREADED HUBS.
5. ALL EXISTING AND NEW EQUIPMENT/STRUCTURES/PIPING THAT ARE OPERATIONAL AND TO REMAIN SHALL BE PROTECTED FROM ANY DAMAGE, DUST, ETC. CAUSED BY CONSTRUCTION ACTIVITIES. ANY DISCREPANCIES NOTED SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF KCATA AND THE ACTIVITY CAUSING THE DISCREPANCY STOPPED. CORRECTIVE ACTIONS SHALL BE APPROVED BY KCATA PRIOR TO THE START OF CORRECTIVE WORK AND SHALL BE PERFORMED AT NO EXPENSE TO OWNER.
6. FENCING SHALL HAVE "DANGER HIGH VOLTAGE" SIGNAGE VISIBLE ON ALL SIDES AND ON GATE ENTRANCES.

SCOPE OF WORK:

1. TPSS BUILDING TO BE FURNISHED TO THE CONTRACTOR BY THE OWNER. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO ACQUIRE TPSS BUILDING SHOP DRAWINGS AND FACTORY TEST RESULTS PRIOR TO CONSTRUCTION. REFER TO SPECIFICATION 01 31 27 - CONTRACT INTERFACES FOR DETAILS.
2. CONTRACTOR SHALL COORDINATE WITH THE OWNER PRIOR TO SITE PREPARATION AND CONSTRUCTION. CONTRACTOR RESPONSIBLE FOR DEVIATIONS TO SITE DESIGN BASED ON FINAL SHOP DRAWINGS. ALL DEVIATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
3. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL CABLES, DUCTBANKS, FOUNDATIONS, STRUCTURES, AND SITE FEATURES AS SHOWN IN THE CONTRACT PLANS.
4. CONTRACTOR RESPONSIBLE FOR TESTING AND COMMISSIONING OF TPSS; INCLUDING ALL INTERNAL EQUIPMENT WITHIN THE TPSS BUILDING AND ALL EXTERNAL EQUIPMENT AND CABLING.
5. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SITE FEATURES WITHIN AREA OF THE WORK PRIOR TO CONSTRUCTION, INCLUDING BUT NOT LIMITED TO:

5.1. EXISTING EVERGY DUCTBANK AND MANHOLE

5.2. ABOVE GROUND STEAMLINE AND FOUNDATIONS

5.3. EXISTING UNDERGROUND UTILITIES
6. EVERGY COORDINATION (PRIOR AND DURING CONSTRUCTION):

6.1. CONTRACTOR RESPONSIBLE FOR FURNISHING AND INSTALLATION OF SECTIONALIZING SWITCHGEAR VAULT. CONTRACTOR TO COORDINATE WITH EVERGY FOR LOCATION AND FURTHER INSTRUCTION.

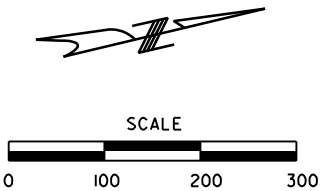
6.2. EVERGY TO FURNISH AND INSTALL SECTIONALIZER SWITCHGEAR.

6.3. CONTRACTOR SHALL COORDINATE INSTALLATION OF EVERGY DUCTBANKS AND VAULT LOCATION WITH EVERGY PRIOR TO CONSTRUCTION AND SUBMIT DEVIATIONS TO THE ENGINEER FOR APPROVAL.

6.4. CONTRACTOR TO COORDINATE CORE-DRILLING OF EVERGY MANHOLE FOR DUCTBANK INSTALLATION WITH EVERGY.

6.5. EVERGY TO FURNISH AND INSTALL CABLES TO SECTIONALIZER SWITCHGEAR AND FROM SECTIONALIZER SWITCHGEAR TO TPSS.

REV	DATE	DESCRIPTION	DESIGNED BY JDW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: G043.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: SHEET NO.: G04316		
			CHECKED BY PGL			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270				
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			APPROVED BY NKS								
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HORIZONTAL & VERTICAL CONTROL

PROJECT COORDINATES ARE CALCULATED FROM A POINT CENTRALIZED TO THIS SPECIFIC PROJECT. STARTING WITH MISSOURI STATE PLANE GRID FEET, APPLYING A COMBINED AVERAGE FACTOR OF .99991068 TO CREATE GROUND FEET AND THEN SUBTRACTING THE TWO FOR A CALCULATED SHIFT DIFFERENCE. THEN APPLYING THE CALCULATED SHIFT DIFFERENCE TO CREATE PROJECT COORDINATES.

SHIFT DIFFERENCE: GROUND NORTHING -95.8721 = PROJECT NORTHING
GROUND EASTING -247.0765 = PROJECT EASTING

CHECKED POINTS

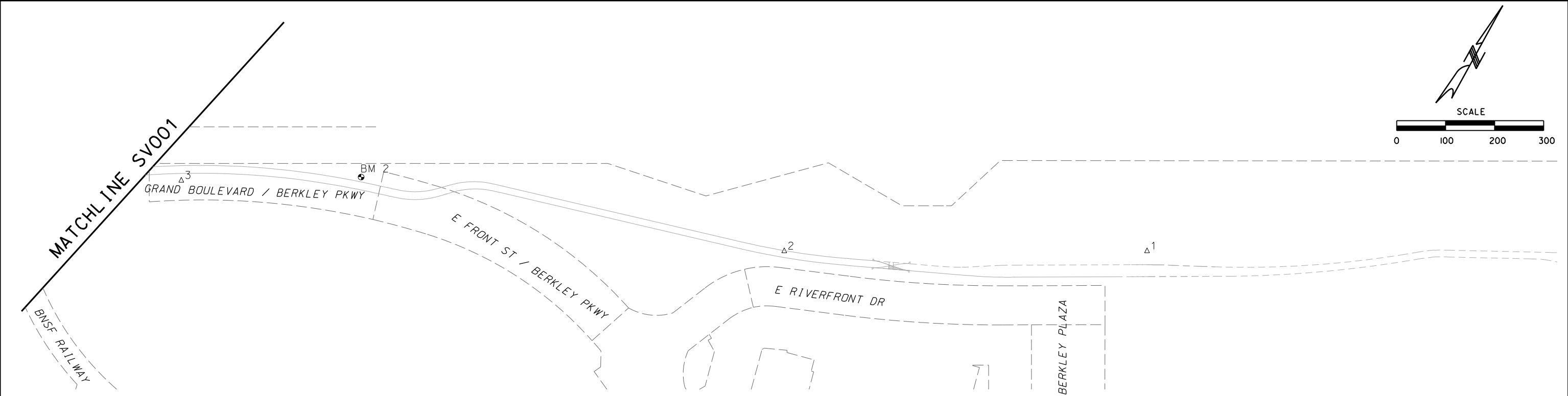
MEASURED WITH GPS N= 1074372.6465 E = 2762843.7542 ELEV. = 741.05

CONTROL POINT TIES

NORTHING: 1071815.249 / EASTING: 2765704.854 /
ELEVATION: 800.08

ELEVATION=757.99

302849



HORIZONTAL & VERTICAL CONTROL

STATE PLANE GRID COORDINATES SHOWN HEREON ARE BASED ON THE MISSOURI STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83, VERTICAL DATUM IS NAVD 88 AND ALL IS SHOWN IN U.S. SURVEY FEET. COORDINATE DATUM IS BASED ON THE MISSOURI HIGHWAY AND TRANSPORTATION COMMISSION GLOBAL NAVIGATION SATELLITE REAL TIME NETWORK USING TRIMBLE R8 RTK RECEIVER. INITIAL START DATE OF NOVEMBER 2017.

PROJECT COORDINATES ARE CALCULATED FROM A POINT CENTRALIZED TO THIS SPECIFIC PROJECT. STARTING WITH MISSOURI STATE PLANE GRID FEET, APPLYING A COMBINED AVERAGE FACTOR OF .99991068 TO CREATE GROUND FEET AND THEN SUBTRACTING THE TWO FOR A CALCULATED SHIFT DIFFERENCE. THEN APPLYING THE CALCULATED SHIFT DIFFERENCE TO CREATE PROJECT COORDINATES.

CENTRALIZED POINT: GRID NORTHING 1073259.3064 EASTING 2765947.2358
DIVIDE BY .99991068
EQUALS GROUND: NORTHING 1073355.1785 EASTING 2766194.3123
SHIFT DIFFERENCE: NORTHING -95.8721 EASTING -247.0765

SHIFT DIFFERENCE: GROUND NORTHING -95.8721 = PROJECT NORTHING
GROUND EASTING -247.0765 = PROJECT EASTING

CHECKED POINTS

MISSOURI GEOGRAPHIC REFERENCE STATION CL 70
STATE PLANE GRID FEET N = 1074372.6052 E = 2762844.0347
DIVIDE BY .99991068
EQUALS GROUND N = 1074468.5767 E = 2763090.8340
SHIFT DIFFERENCE -95.8721 -247.0765
PROJECT COORDINATES N = 1074372.7046 E = 2762843.7575 ELEV.= 741.14

MEASURED WITH GPS N= 1074372.6465 E = 2762843.7542 ELEV. = 741.05

CONTROL POINT TIES

CP 1 SET 5/8" IRON BAR W/ CONTROL CAP, 75' NORTH OF NORTH BACK OF CURB ALONG GRAND BETWEEN SIDEWALK @ EAST MOST STONE PERGOLA OF THREE.

RM-1 46.16' @ 17° TO SOUTHWEST FACE OF LIGHT POLE
RM-2 53.73' @ 130° TO NORTHWEST CORNER OF STONE COLUMN
RM-3 53.11' @ 164° TO NORTHEAST CORNER OF STONE COLUMN
RM-4 39.55' @ 201° TO NORTHEAST FACE OF LIGHT POLE

NORTHING: 1074453.540
EASTING: 2768368.796
ELEVATION: 765.13

CP 2 SET 5/8" IRON BAR W/ CONTROL CAP, 60' NORTH OF NORTH BACK OF CURB ALONG GRAND, 100' EAST OF WEST BUILDING LINE FOR NEW APARTMENTS.

RM-1 22.08' @ 70° TO WEST EDGE OF SIDEWALK
RM-2 21.53' @ 160° TO NORTH EDGE OF SIDEWALK
RM-3 35.51' @ 320° TO SOUTHWEST FACE OF LIGHT POLE

NORTHING: 1074096.361
EASTING: 2767720.550
ELEVATION: 761.68

CP 3 SET 5/8" IRON BAR W/ CONTROL CAP ALONG TOP OF DIRT BANK ON SOUTH SIDE OF GRAND BOULEVARD @ EAST END OF BRIDGE.

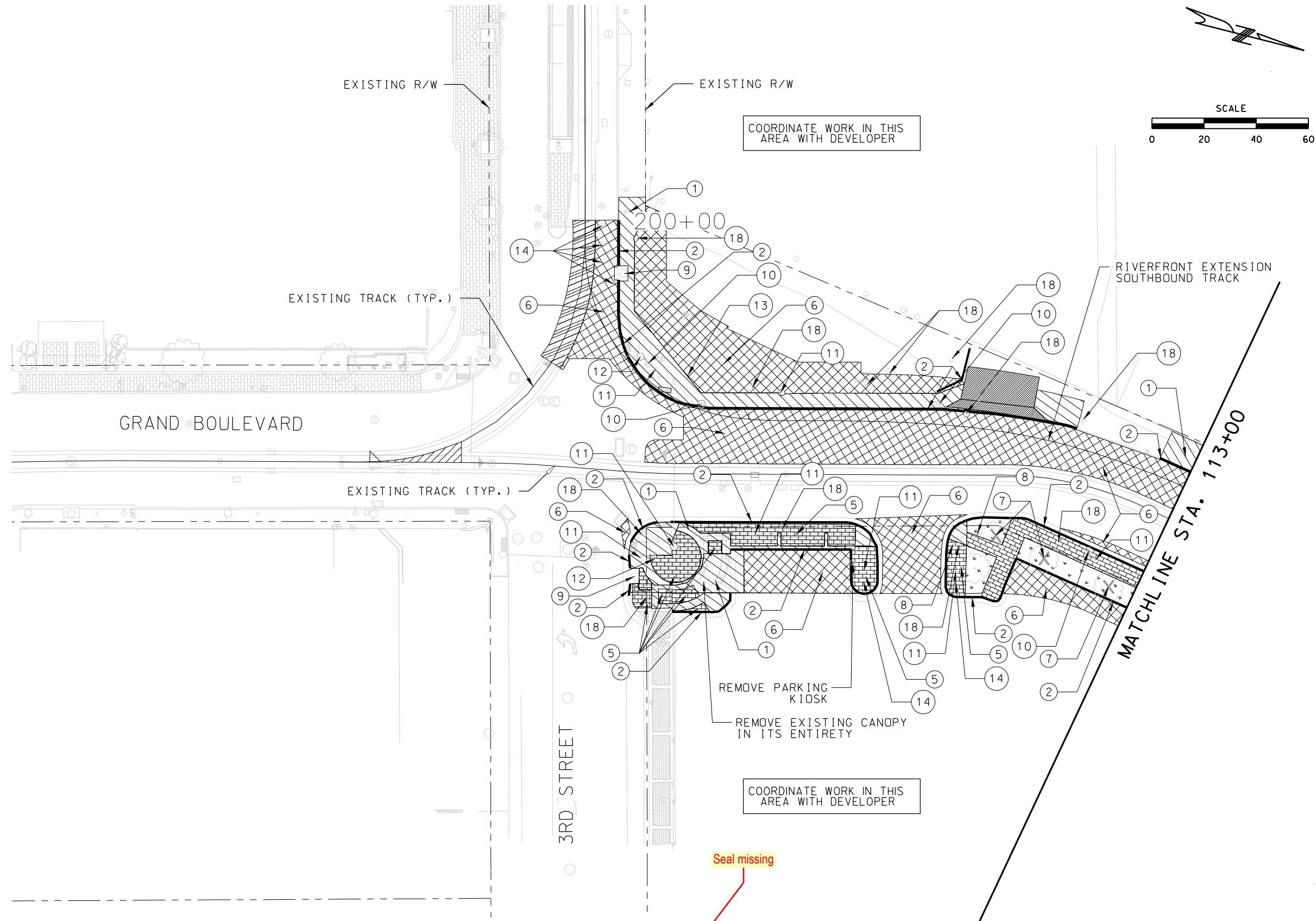
RM-1 29.21' @ 52° TO SOUTHWEST CORNER OF CONCRETE COLUMN IN CONCRETE BRIDGE RAIL
RM-2 33.03' @ 152° TO MAG NAIL IN NORTH EDGE OF ASPHALT PATH
RM-3 7.86' @ 285° TO SOUTHEAST CORNER OF CONCRETE COLUMN IN CONCRETE BRIDGE RAIL @ EAST END OF MSE WALL

NORTHING: 1073628.990
EASTING: 2766573.708
ELEVATION: 775.91

BM 2 - CHISELED + ON NE BONNET BOLT ON FIREHYDRANT ON THE NORTH SIDE OF GRAND AVE. +/- 50' WEST OF EAST END OF CONCRETE BARRIER.

ELEVATION=767.97

REV	DATE	DESCRIPTION	DESIGNED BY	TSB			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 DESIGN GROUP, LLC 1411 East 104th St. Kansas City, MO 64131 Tel (816) 874-4655 Cert. of Authority: 2002010300	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 100'		
			CHECKED BY	SMW									FILENAME: SV002.dgn	
			DRAWN BY	TSB									CONTRACT NO.:	
			CHECKED BY	SMW									CONTRACT NO. ***	
			APPROVED BY	NKS									VOLUME: 1	
PLOT DATE: 12/21/2022			7:40:14 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION			SURVEY CONTROL SHEET 2 OF 2			DRAWING NO.: SV002	SHEET NO.: 18

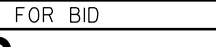


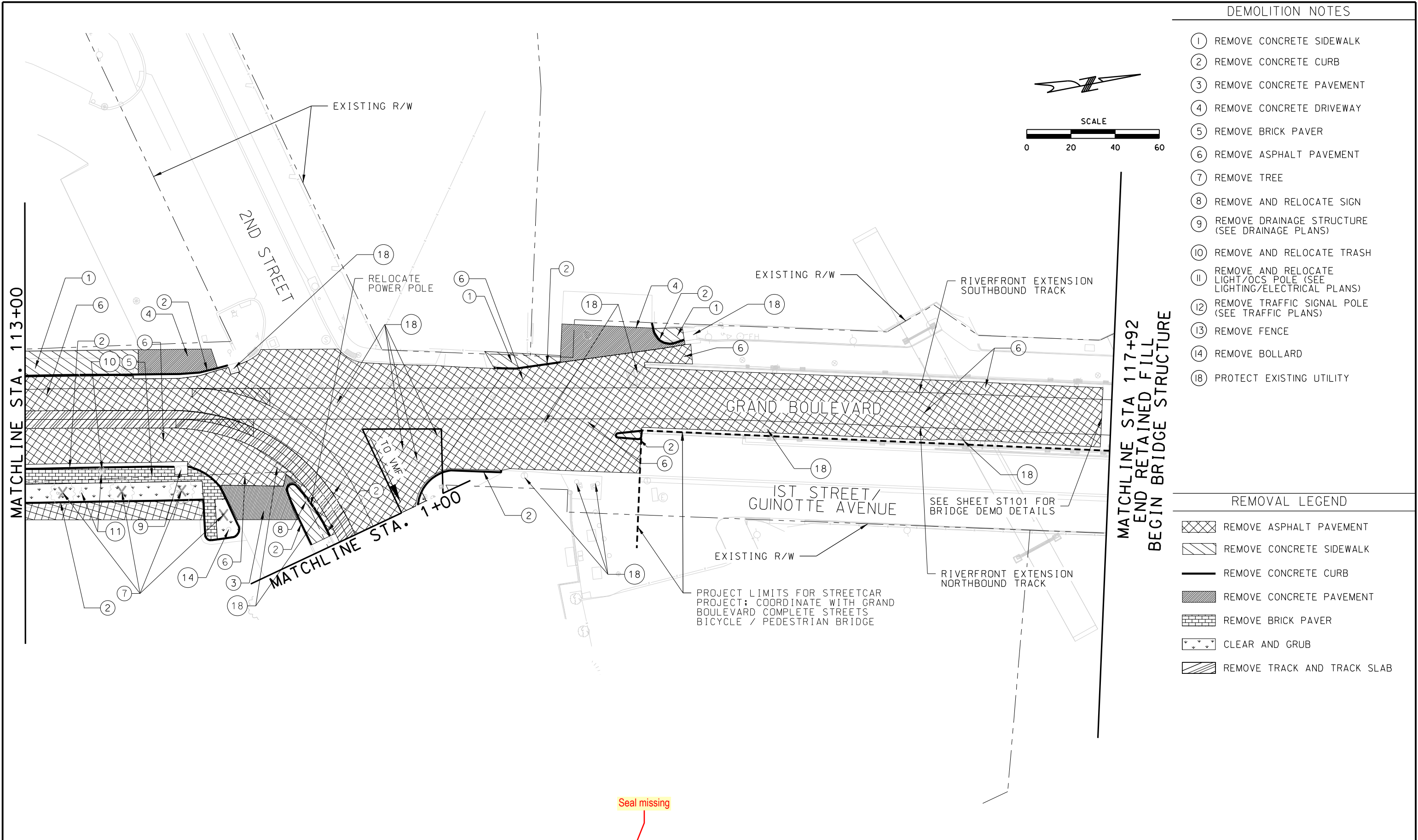
DEMOLITION NOTES

- ① REMOVE CONCRETE SIDEWALK
- ② REMOVE CONCRETE CURB
- ③ REMOVE CONCRETE PAVEMENT
- ④ REMOVE CONCRETE DRIVEWAY
- ⑤ REMOVE BRICK PAVER
- ⑥ REMOVE ASPHALT PAVEMENT
- ⑦ REMOVE TREE
- ⑧ REMOVE AND RELOCATE SIGN
- ⑨ REMOVE DRAINAGE STRUCTURE (SEE DRAINAGE PLANS)
- ⑩ REMOVE AND RELOCATE TRASH
- ⑪ REMOVE AND RELOCATE LIGHT/OCS POLE (SEE LIGHTING/ELECTRICAL PLANS)
- ⑫ REMOVE TRAFFIC SIGNAL POLE (SEE TRAFFIC PLANS)
- ⑬ REMOVE FENCE
- ⑭ REMOVE BOLLARD
- ⑮ PROTECT EXISTING UTILITY

REMOVAL LEGEND

- REMOVE ASPHALT PAVEMENT
- REMOVE CONCRETE SIDEWALK
- REMOVE CONCRETE CURB
- REMOVE CONCRETE PAVEMENT
- REMOVE BRICK PAVER
- CLEAR AND GRUB
- REMOVE TRACK AND TRACK SLAB

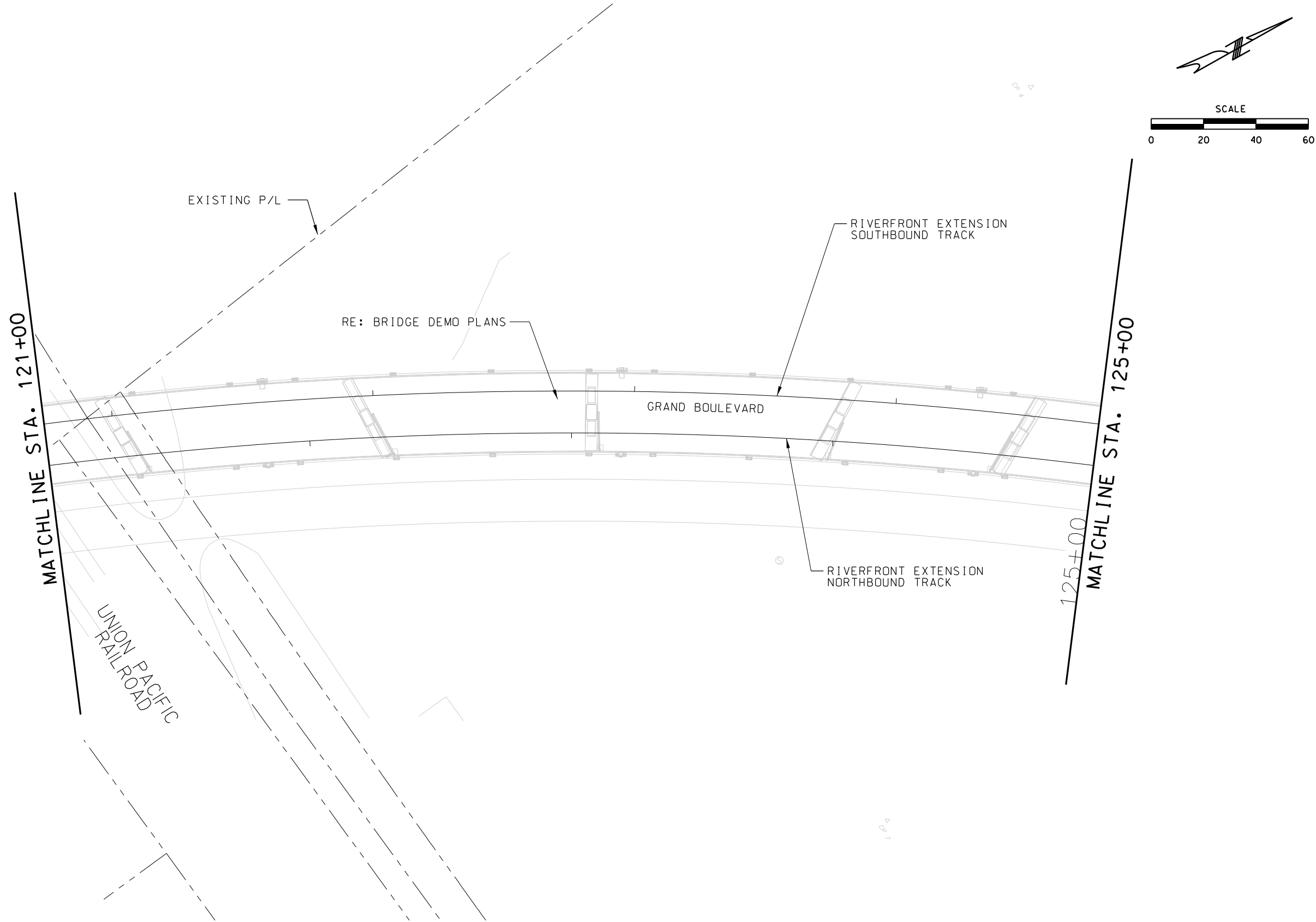
REV	DATE	DESCRIPTION	DESIGNED BY	TRM		ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'
			CHECKED BY	PY			 HDR Engineering, Inc.	 Tallaferrro & Browne, Inc.		FILENAME: C501.dgn
			DRAWN BY	DT						CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	TRM						VOLUME: I
			APPROVED BY	NKS						DRAWING NO.: C501
PLOT DATE: 12/23/2022			2:43:22 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION			SHEET NO.: 19

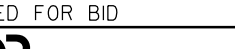


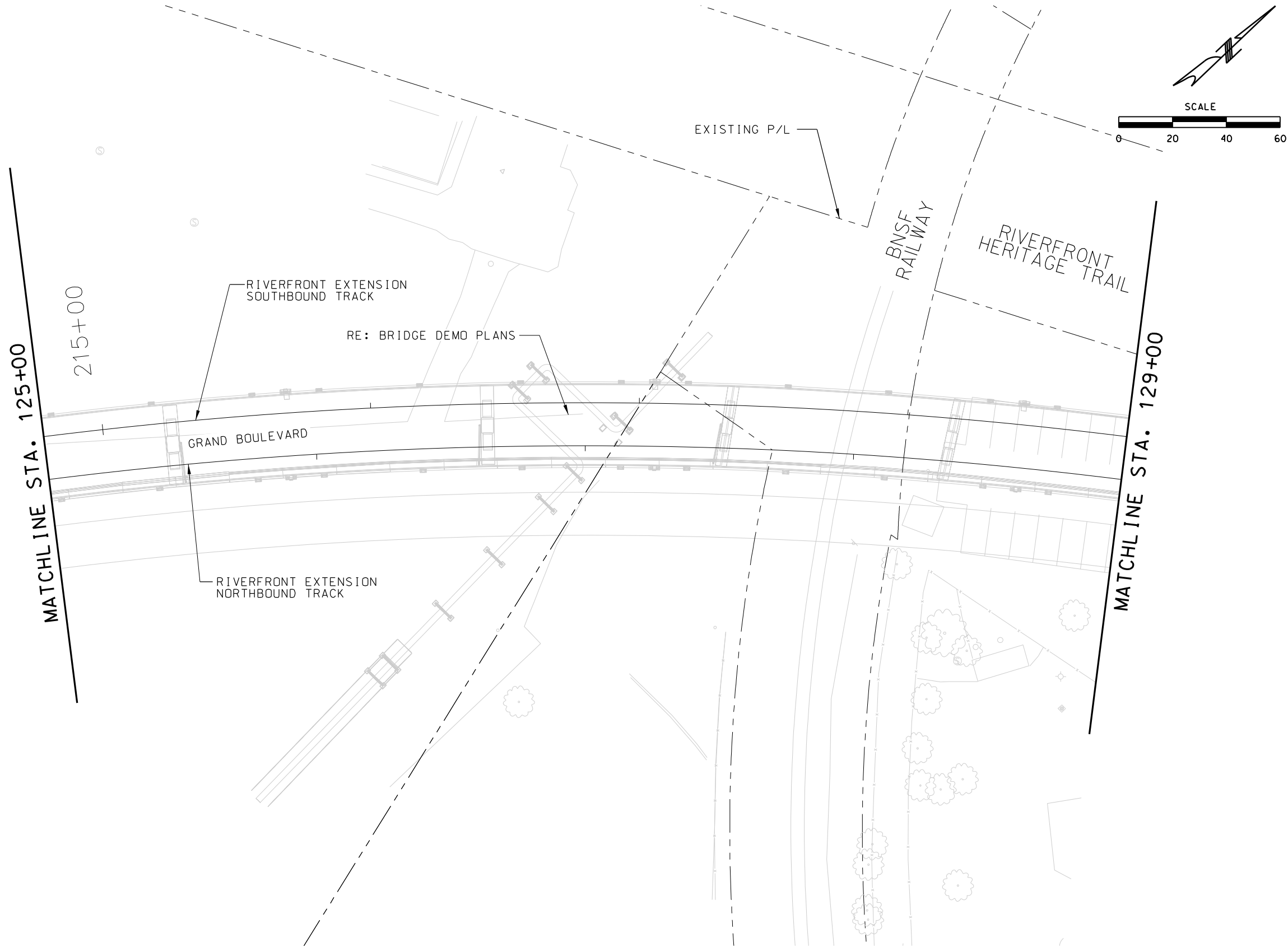
- DEMOLITION NOTES
- ① REMOVE CONCRETE SIDEWALK
 - ② REMOVE CONCRETE CURB
 - ③ REMOVE CONCRETE PAVEMENT
 - ④ REMOVE CONCRETE DRIVEWAY
 - ⑤ REMOVE BRICK PAVER
 - ⑥ REMOVE ASPHALT PAVEMENT
 - ⑦ REMOVE TREE
 - ⑧ REMOVE AND RELOCATE SIGN
 - ⑨ REMOVE DRAINAGE STRUCTURE (SEE DRAINAGE PLANS)
 - ⑩ REMOVE AND RELOCATE TRASH
 - ⑪ REMOVE AND RELOCATE LIGHT/OCS POLE (SEE LIGHTING/ELECTRICAL PLANS)
 - ⑫ REMOVE TRAFFIC SIGNAL POLE (SEE TRAFFIC PLANS)
 - ⑬ REMOVE FENCE
 - ⑭ REMOVE BOLLARD
 - ⑮ PROTECT EXISTING UTILITY

- REMOVAL LEGEND
- REMOVE ASPHALT PAVEMENT
 - REMOVE CONCRETE SIDEWALK
 - REMOVE CONCRETE CURB
 - REMOVE CONCRETE PAVEMENT
 - REMOVE BRICK PAVER
 - CLEAR AND GRUB
 - REMOVE TRACK AND TRACK SLAB

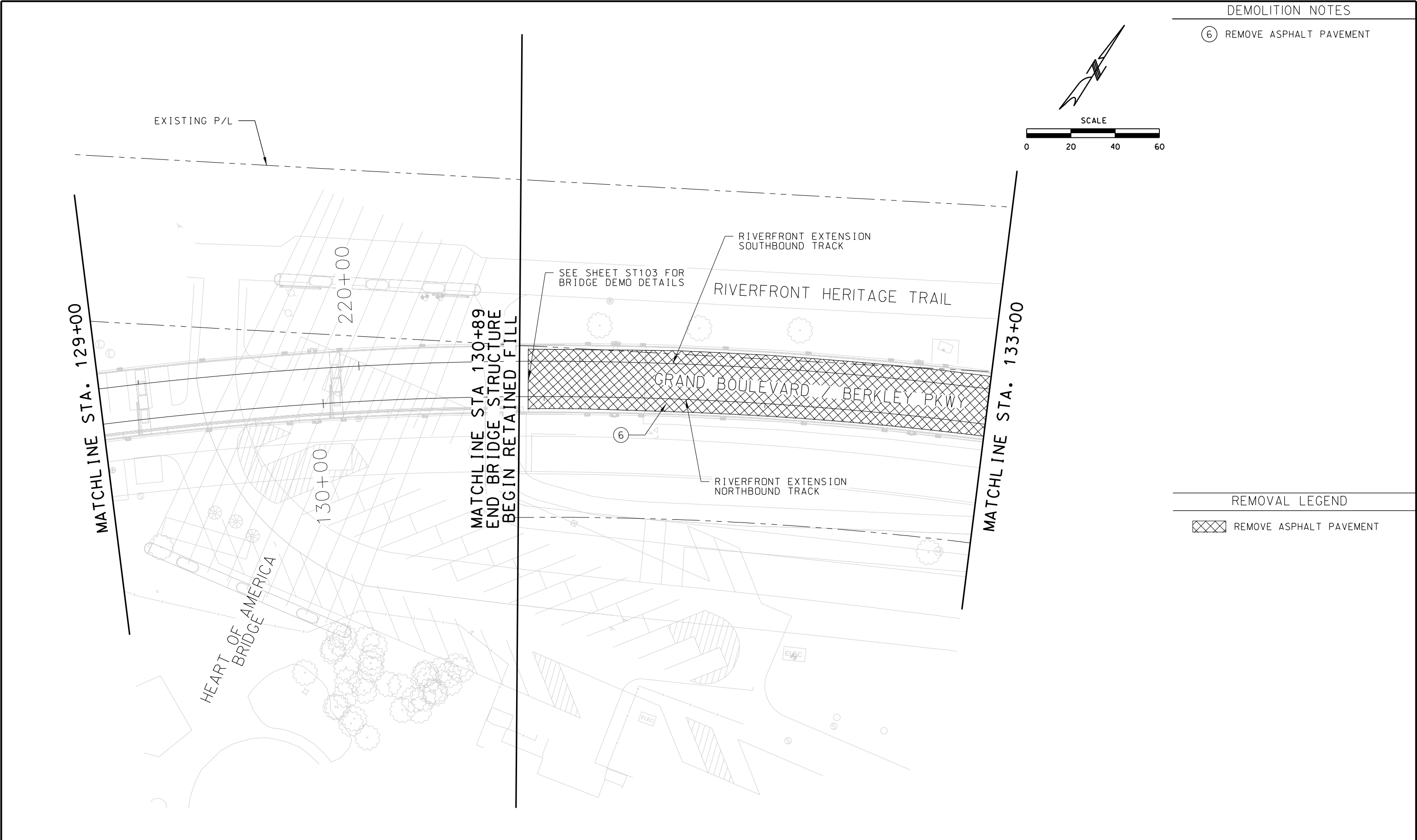
REV	DATE	DESCRIPTION	DESIGNED BY	TRM	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'
			CHECKED BY	PY			DEMOLITION PLAN	FILENAME: C502.dgn
			DRAWN BY	DT	10450 Holmes Road	10220 E. 8th Street	STA 113+00 TO STA 117+92	CONTRACT NO.: ***
			CHECKED BY	TRM	Suite 600	Kansas City, MO 64106		VOLUME:
			APPROVED BY	NKS	816-360-2700	816-283-3456		DRAWING NO.: SHEET NO.:
					Certificate of Authority: 000856	Certificate of Authority: 000466		C502 20
PLOT DATE: 12/23/2022 2:44:59 PM			DATE: 12-23-2022		NOT FOR CONSTRUCTION			



REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022	 Talliaferro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	PY			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-380-2700 Certificate of Authority: 000856		FILENAME: C504.dgn				
			DRAWN BY	DT								CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY	TRM									VOLUME: 1
			APPROVED BY	NKS									
PLOT DATE: 12/23/2022			8:53:34 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION				C504	22	



REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallafiero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION DEMOLITION PLAN STA 125+00 TO STA 129+00				SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	PY			FILENAME: C505.dgn											
			DRAWN BY	DT			CONTRACT NO.: CONTRACT NO. ***											
			CHECKED BY	TRM			VOLUME: I											
			APPROVED BY	NKS			DRAWING NO.: SHEET NO.: C505 23											
PLOT DATE: 12/23/2022			8:53:37 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION											



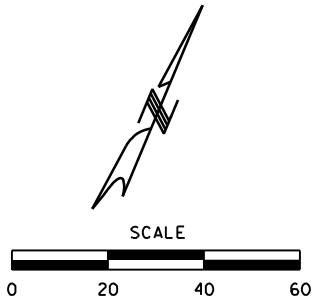
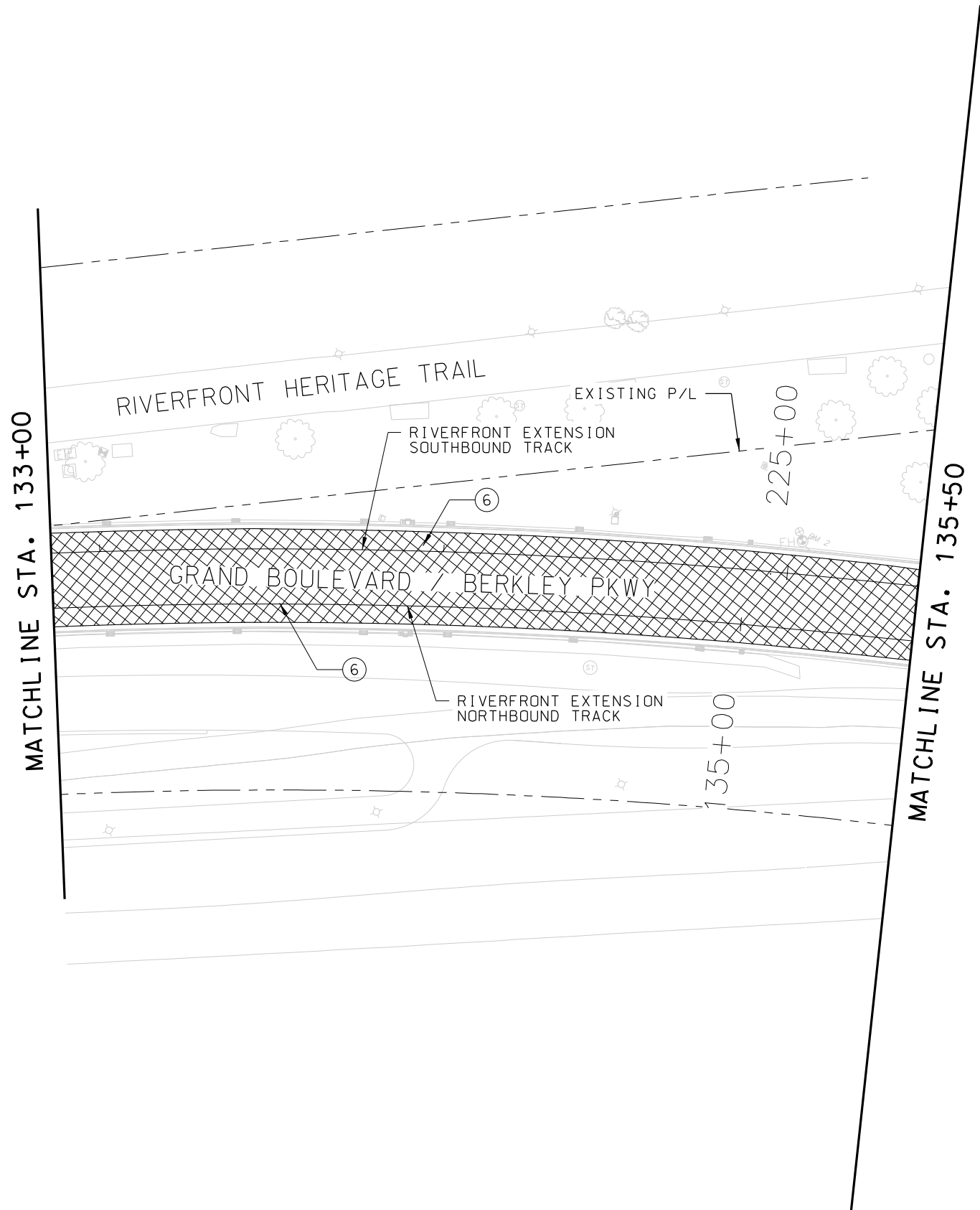
DEMOLITION NOTES

- ⑥ REMOVE ASPHALT PAVEMENT

REMOVAL LEGEND

- REMOVE ASPHALT PAVEMENT

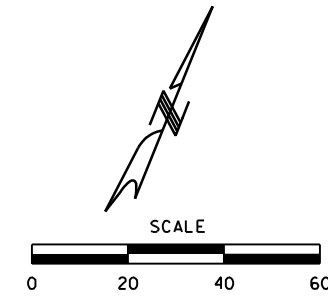
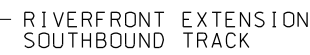
REV		DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022			Tallafiero & Browne, Inc.		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":					
				CHECKED BY	PY			10450 Holmes Road			1020 E. 8th Street			1" = 20'							
				DRAWN BY	DT			Suite 600			Kansas City, MO 64106			FILENAME:							
				CHECKED BY	TRM			Kansas City, MO 64131-3471			816-360-2700			C506.dgn							
				APPROVED BY	NKS			Certificate of Authority: 000856			816-283-3456			CONTRACT NO.: ***							
														VOLUME:							
														I							
PLOT DATE: 12/23/2022		8:53:40 AM		DATE	12-23-2022					NOT FOR CONSTRUCTION								DEMOLITION PLAN		DRAWING NO.:	
																		STA 129+00 TO STA 133+00		SHEET NO.:	
																C506					
																24					



- DEMOLITION NOTES
- ⑥ REMOVE ASPHALT PAVEMENT

- REMOVAL LEGEND
- REMOVE ASPHALT PAVEMENT

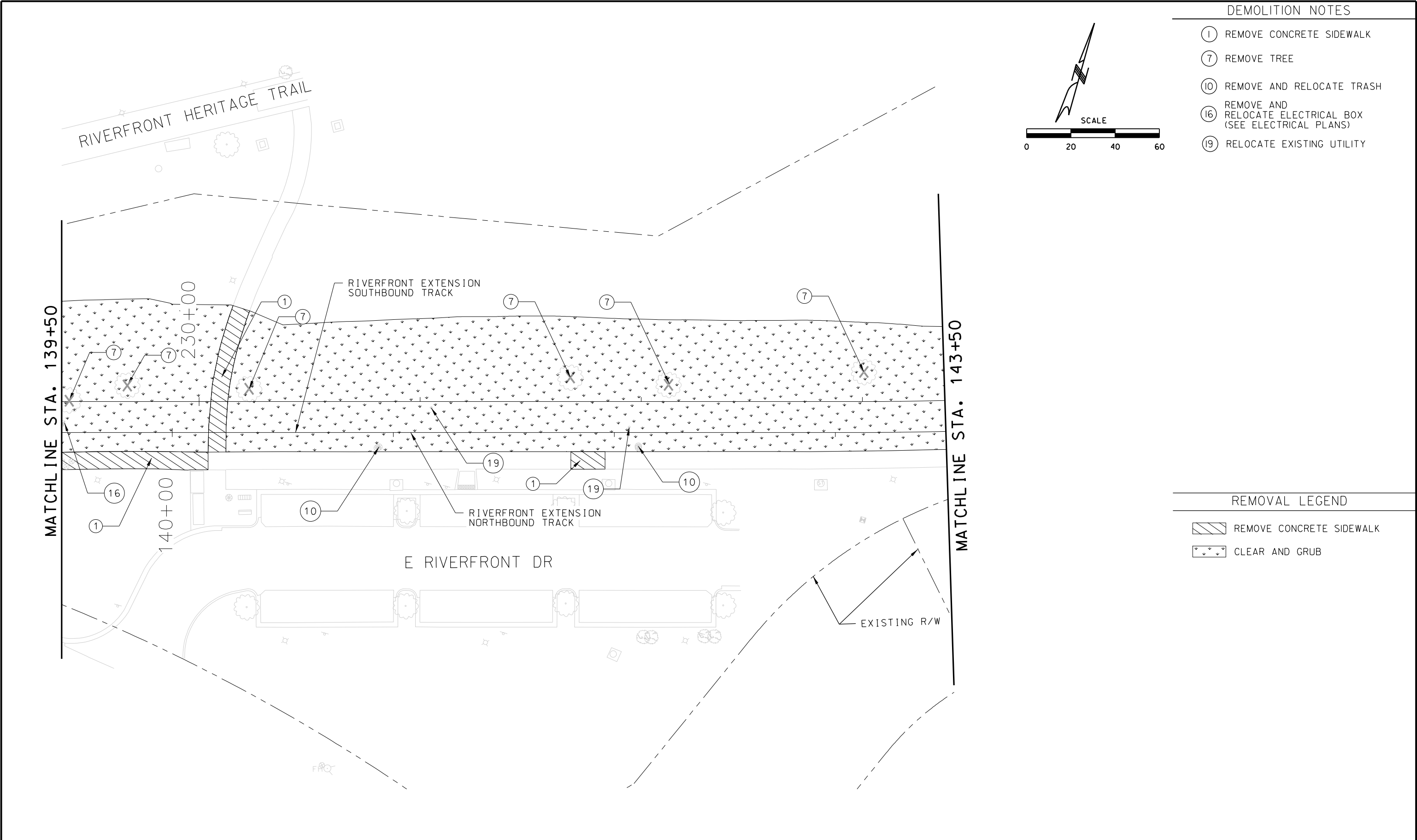
REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'
			CHECKED BY	PY			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallaferrro & Browne, Inc. 10220 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466		
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			APPROVED BY	NKS						
PLOT DATE: 12/23/2022 8:53:43 AM			DATE	12-23-2022	NOT FOR CONSTRUCTION					
									CONTRACT NO.:	CONTRACT NO. ***
									VOLUME:	1
									DRAWING NO.:	SHEET NO.:
									C507	25



- ## DEMOLITION NOTES
-
- ① REMOVE CONCRETE SIDEWALK
 - ② REMOVE CONCRETE CURB
 - ⑥ REMOVE ASPHALT PAVEMENT
 - ⑦ REMOVE TREE
 - ⑪ REMOVE AND RELOCATE
LIGHT/OCS POLE
(SEE LIGHTING/ELECTRICAL PLANS)
 - ⑱ PROTECT EXISTING UTILITY

- ## REMOVAL LEGEND
- | | |
|---|--------------------------|
|  | REMOVE ASPHALT PAVEMENT |
|  | REMOVE CONCRETE SIDEWALK |
|  | REMOVE CONCRETE CURB |
|  | CLEAR AND GRUB |

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION DEMOLITION PLAN STA 135+50 TO STA 139+50	SCALE FOR 22"x34": 1" = 20'
			CHECKED BY	PY			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Talliaferro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466		FILENAME: C508.dgn
			DRAWN BY	DT						CONTRACT NO.:
			CHECKED BY	TRM						CONTRACT NO. ***
			APPROVED BY	NKS						VOLUME: 1
PLOT DATE: 12/23/2022		8:53:46 AM	DATE	12-23-2022			NOT FOR CONSTRUCTION		DRAWING NO.: C508	SHEET NO.: 26



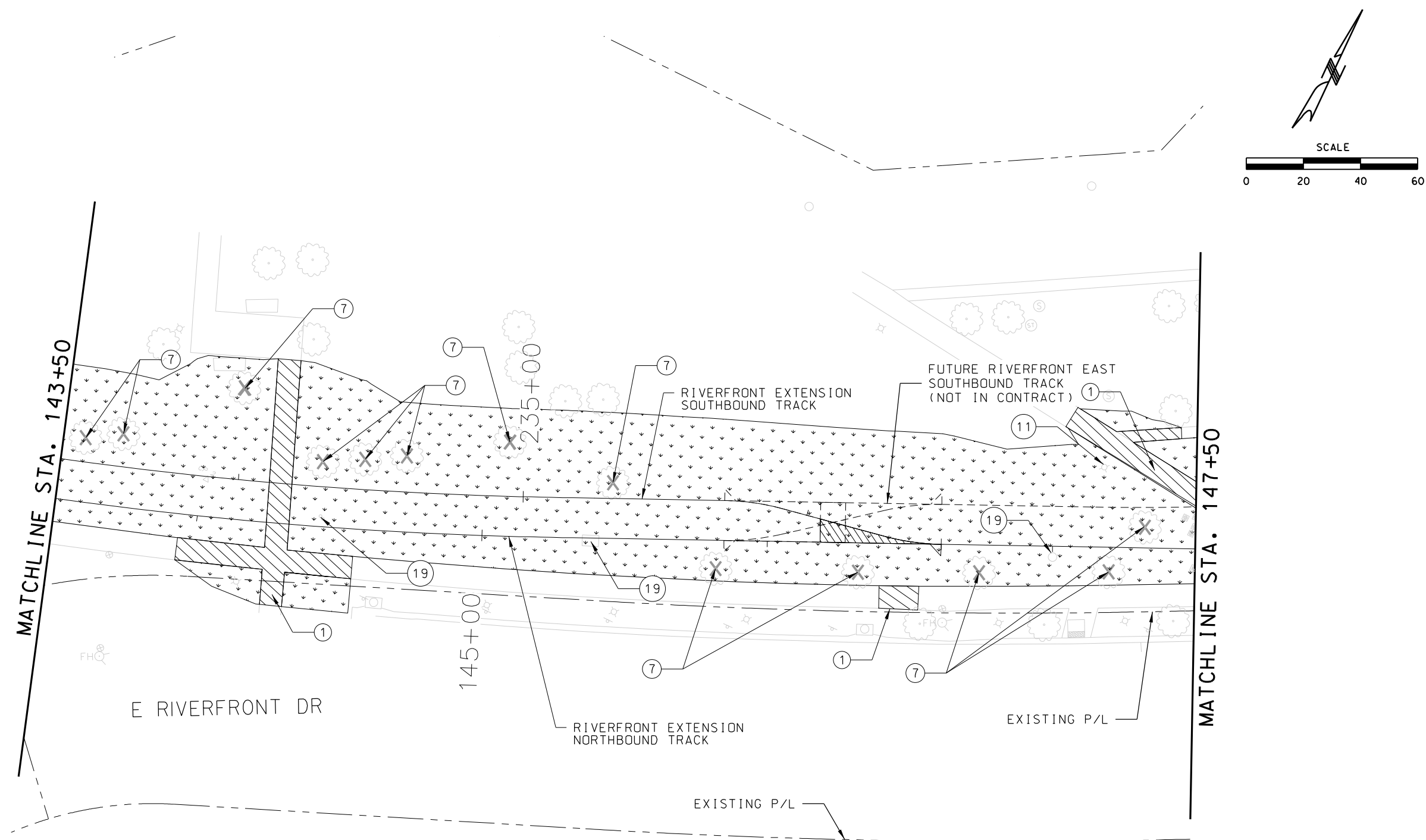
DEMOLITION NOTES

- ① REMOVE CONCRETE SIDEWALK
- ⑦ REMOVE TREE
- ⑩ REMOVE AND RELOCATE TRASH
- ⑩ REMOVE AND RELOCATE ELECTRICAL BOX (SEE ELECTRICAL PLANS)
- ⑰ RELOCATE EXISTING UTILITY

REMOVAL LEGEND

- REMOVE CONCRETE SIDEWALK
- CLEAR AND GRUB

REV		DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 20"				
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				DRAWN BY	DT					10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				Tallaferrero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466		CONTRACT NO.:		
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PLOT DATE: 12/23/2022			8:53:49 AM					DATE		12-23-2022						DRAWING NO.:		
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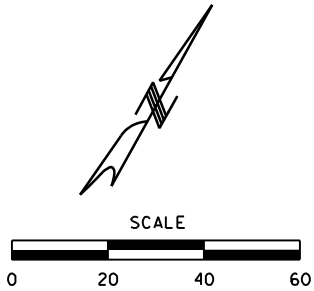
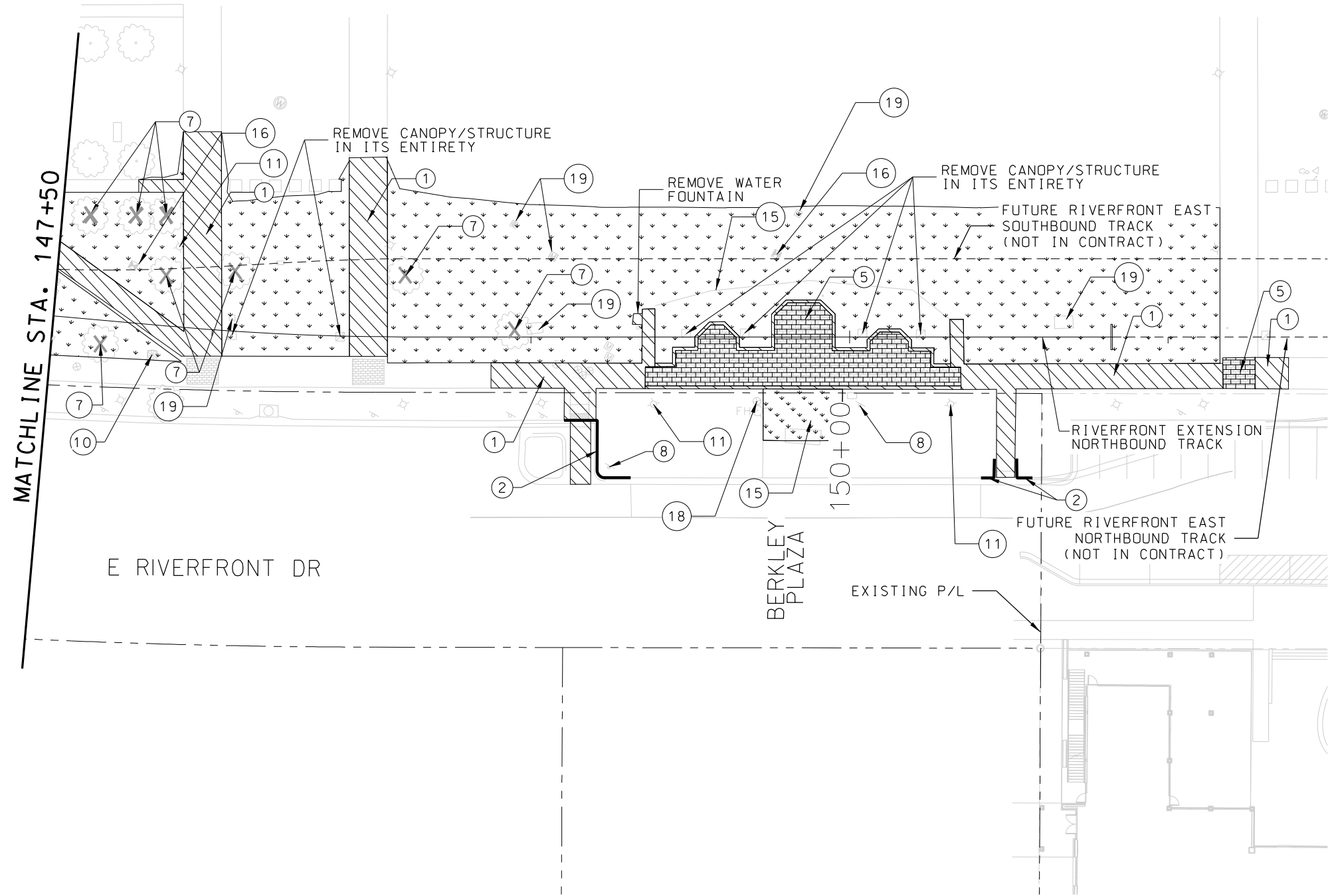
DEMOLITION NOTES

- ① REMOVE CONCRETE SIDEWALK
- ⑦ REMOVE TREE
- ⑪ REMOVE AND RELOCATE LIGHT/OCS POLE (SEE LIGHTING/ELECTRICAL PLANS)
- ⑲ RELOCATE EXISTING UTILITY

REMOVAL LEGEND

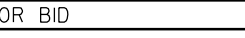
- REMOVE CONCRETE SIDEWALK
- CLEAR AND GRUB

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION DEMOLITION PLAN STA 143+50 TO STA 147+50		SCALE FOR 22"x34": 1" = 20' FILENAME: C510.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: SHEET NO.: C51028	
			CHECKED BY	PY			HDR Engineering, Inc.					
			DRAWN BY	DT			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856					
			CHECKED BY	TRM			Tallafiero & Browne, Inc.					
			APPROVED BY	NKS			10220 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466					
PLOT DATE: 12/23/2022			8:53:52 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION					

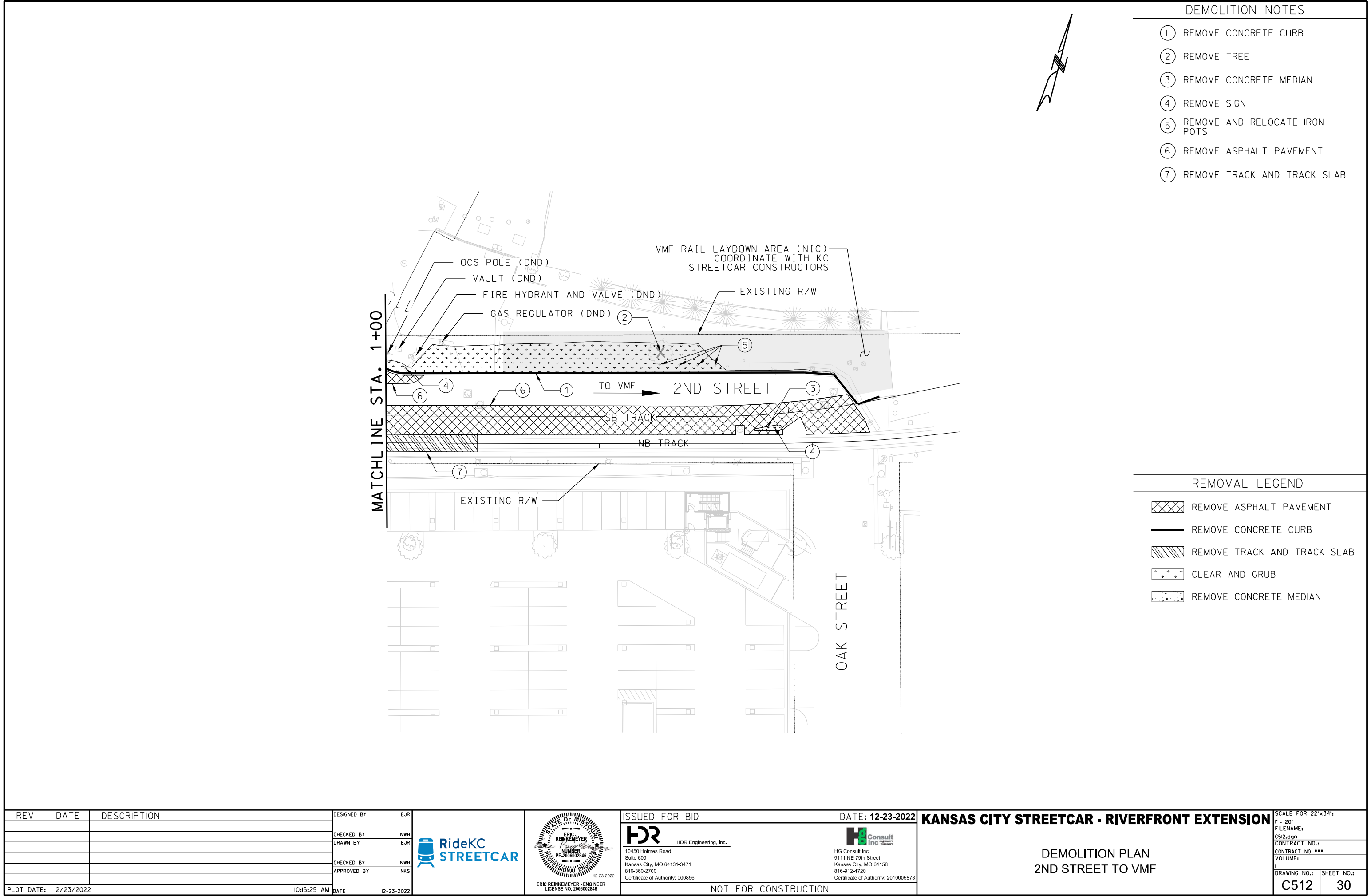


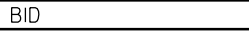
- DEMOLITION NOTES
- ① REMOVE CONCRETE SIDEWALK
 - ② REMOVE CONCRETE CURB
 - ⑤ REMOVE BRICK PAVER
 - ⑦ REMOVE TREE
 - ⑧ REMOVE AND RELOCATE SIGN
 - ⑩ REMOVE TRASH AND RELOCATE
 - ⑪ REMOVE AND RELOCATE LIGHT/OCS POLE (SEE LIGHTING/ELECTRICAL PLANS)
 - ⑮ REMOVE LANDSCAPE TREATMENTS
 - ⑯ REMOVE AND RELOCATE ELECTRICAL BOX (SEE ELECTRICAL PLANS)
 - ⑱ PROTECT EXISTING UTILITY
 - ⑲ RELOCATE EXISTING UTILITY

- REMOVAL LEGEND
- REMOVE CONCRETE SIDEWALK
 - REMOVE CONCRETE CURB
 - REMOVE BRICK PAVER
 - CLEAR AND GRUB

REV		DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
				CHECKED BY	PY			 HDR Engineering, Inc.					FILENAME:
				DRAWN BY	DT			10450 Holmes Road		Talliaferro & Browne, Inc.			C511.dgn
				CHECKED BY	TRM			Suite 600		1020 E. 8th Street			CONTRACT NO.:
				APPROVED BY	NKS			Kansas City, MO 64131-3471		Kansas City, MO 64106			CONTRACT NO. ***
						816-360-2700		816-283-3456		VOLUME:			
						Certificate of Authority: 000856		Certificate of Authority: 000466		I			
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										SHEET NO.:			
										C511			
										29			
PLOT DATE: 12/23/2022		8:53:54 AM		DATE	12-23-2022			NOT FOR CONSTRUCTION					

DEMOLITION PLAN
STA 147+50 TO END

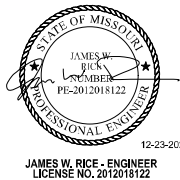


REV	DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'		
			CHECKED BY	NWH			 HDR Engineering, Inc.	 HG Consult Inc 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 HG Consult Inc 9111 NE 79th Street Kansas City, MO 64158 816-412-4720 Certificate of Authority: 2010005873	DEMOLITION PLAN 2ND STREET TO VMF		FILENAME:		
			DRAWN BY	EJR						CONTRACT NO.: CONTRACT NO. ***		CONTRACT NO.:		
			CHECKED BY	NWH						VOLUME: 1		DRAWING NO.:	SHEET NO.:	
			APPROVED BY	NKS								C512	30	
PLOT DATE: 12/23/2022 10:15:25 AM			DATE	12-23-2022			NOT FOR CONSTRUCTION							



REV	DATE	DESCRIPTION
PLOT DATE: 12/23/2022		8:39:25 AM

DESIGNED BY	CRR
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS
DATE	12-23-2022

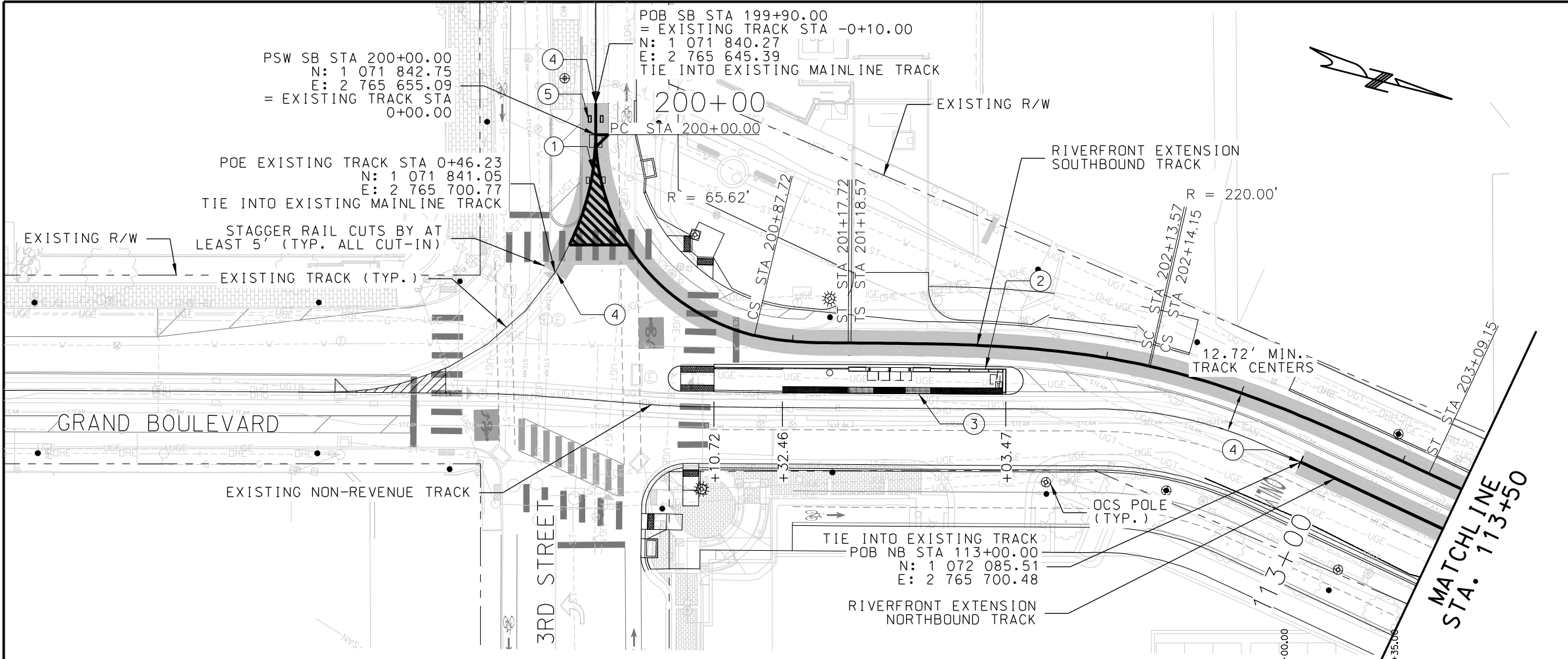


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

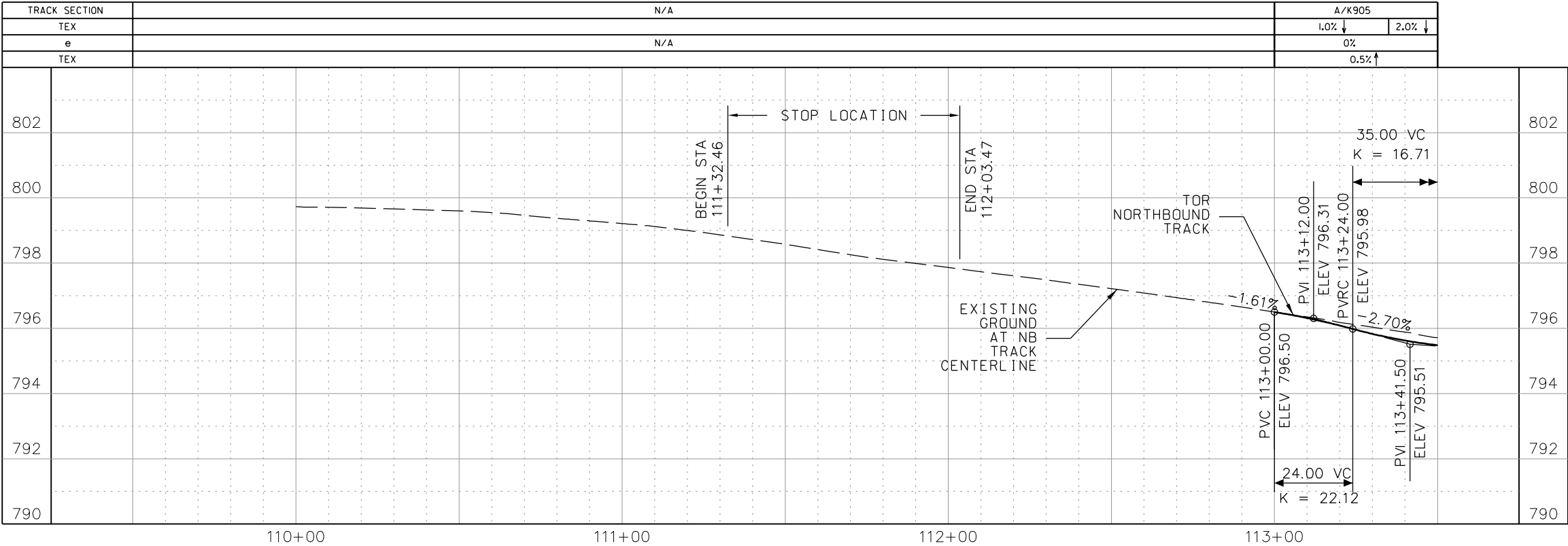
TRACK PLAN AND PROFILE
KEY MAP

SCALE FOR 22"x34": 1" = 150'	
FILENAME: K001.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
K001	31



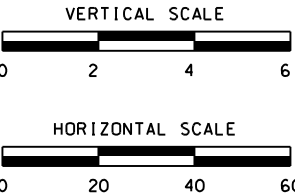
CONSTRUCTION NOTES

- TURNOUT #20000
INSTALL A 20M/25M EQUILATERAL
POWERED EMBEDDED TURNOUT. SEE
SHEET K908.
- CONSTRUCT STREETCAR STOP. SEE
SHEETS C201 AND P101
- PROFILE BASED ON SURVEYED
EXISTING TRACK TOP OF RAIL.
FIELD VERIFY TOP OF RAIL
ELEVATIONS WHEN SETTING LEVEL
BOARDING STOP ELEVATIONS.
- FIELD VERIFY EXISTING TRACK
CONDITION AND WELD LOCATIONS TO
DETERMINE EXACT TIE-IN POINTS
- SB STA 199+95.00
INSTALL TRACK DRAIN

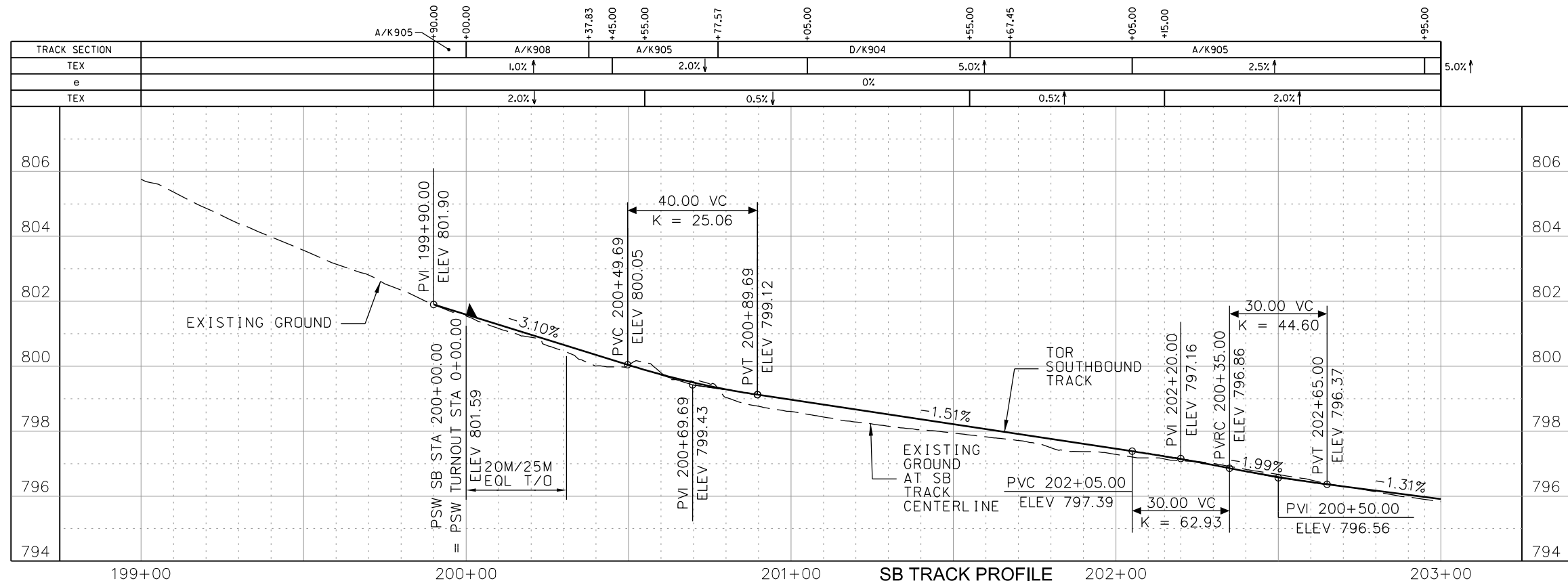


GENERAL NOTES

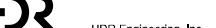
- SEE DISCIPLINE SPECIFIC
DRAWINGS FOR DETAILED
INFORMATION ON CIVIL, TRAFFIC,
SYSTEMS, AND DRAINAGE
STRUCTURES.
- ALL ELEVATIONS AND DIMENSIONS
GIVEN ARE IN FEET UNLESS
OTHERWISE NOTED.
- ALL CURVES ARE BASED ON ARC
DEFINITION.
- PROFILES DESIGNED TO FINAL TOP
OF RAIL ELEVATION.

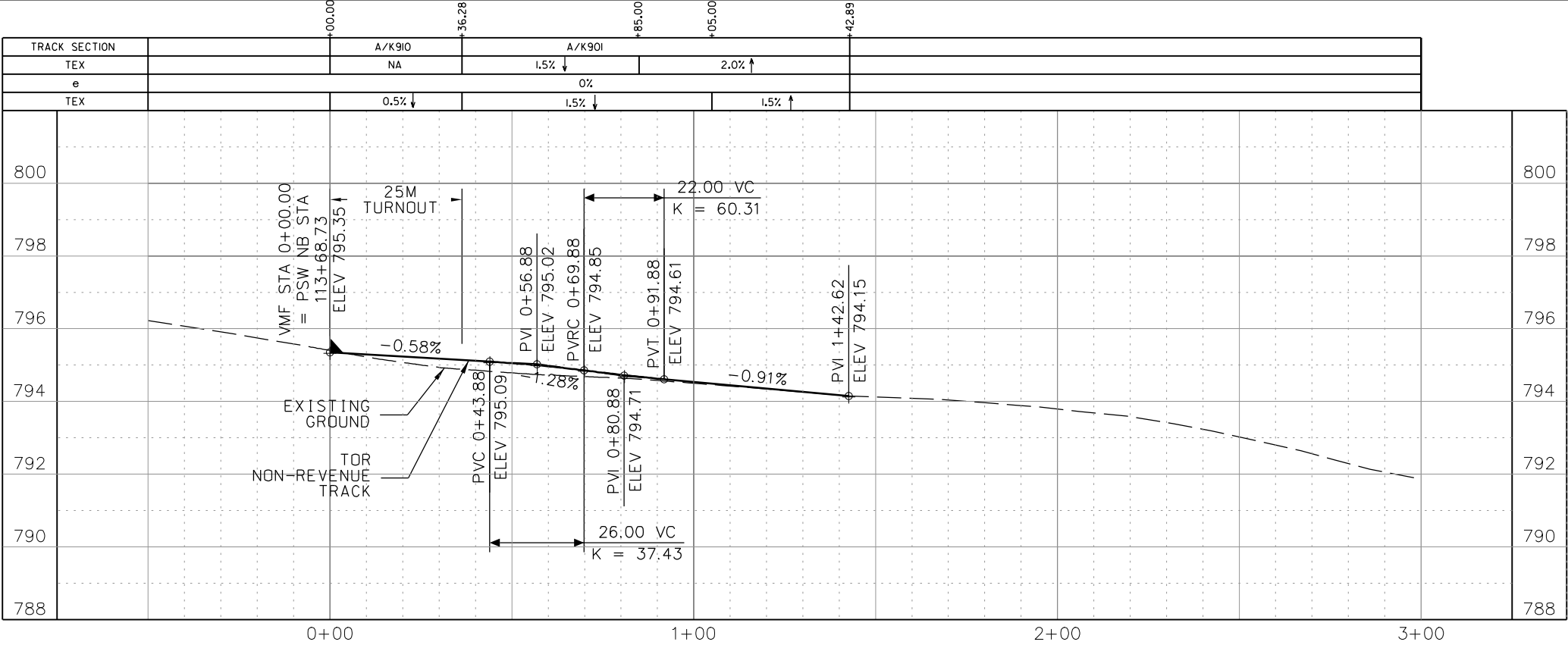


REV	DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H ₁ P = 20' V ₁ P = 2'	
			CHECKED BY	JWR							FILENAME: K101.dgn
			DRAWN BY	MMO			10450 Holmes Road				CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	JWR			Suite 600				VOLUME:
			APPROVED BY	NKS			Kansas City, MO 64131-3471				DRAWING NO.: SHEET NO.:
PLOT DATE: 12/23/2022 8:39:40 AM			DATE	12-23-2022	NOT FOR CONSTRUCTION			NORTHBOUND TRACK PLAN AND PROFILE STA BEGIN TO STA 113+50		K101 32	

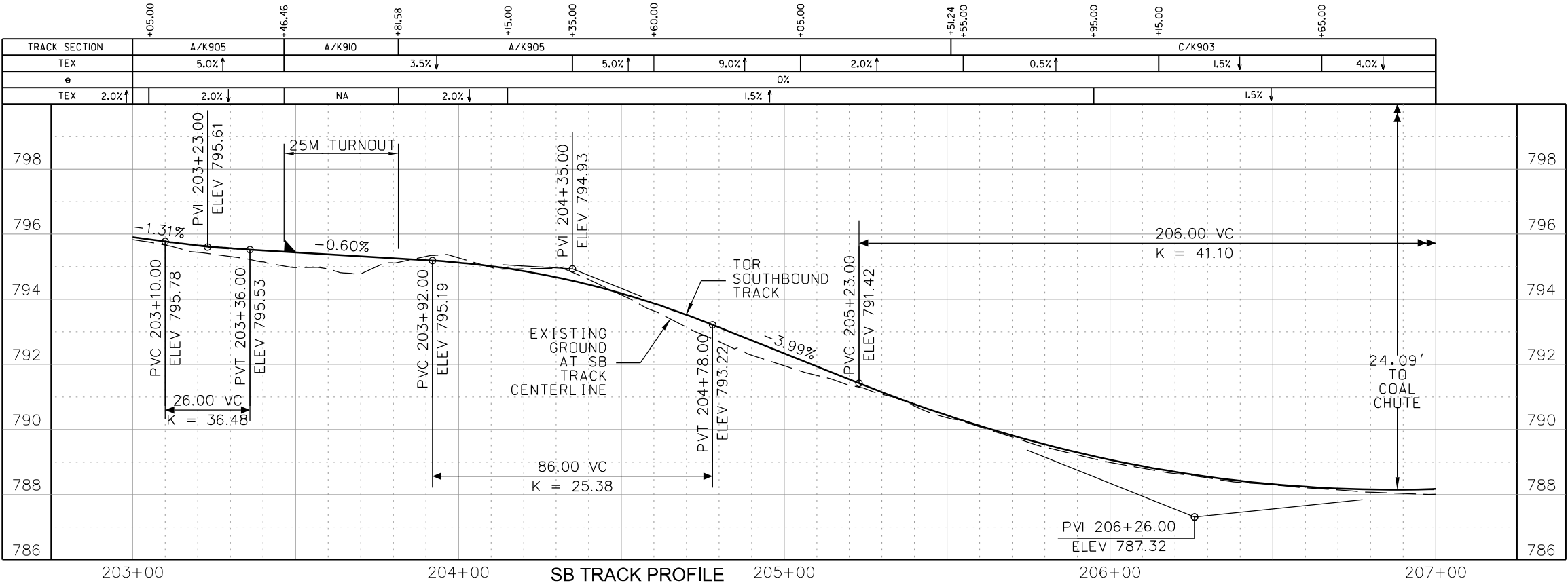


- VERTICAL SCALE
-
- 0 2 4 6
- HORIZONTAL SCALE
-
- 0 20 40 60

REV	DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION EXISTING TRACK TIE-IN PROFILE STA -1+00 TO STA 2+50 SOUTHBOUND TRACK PROFILE STA 199+00 TO STA 203+00	SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	
			CHECKED BY	JWR				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		NOT FOR CONSTRUCTION	FILENAME:
			DRAWN BY	MMO							K101A.dgn
			CHECKED BY	JWR							CONTRACT NO.:
			APPROVED BY	NKS							CONTRACT NO. ***
											VOLUME:
PLOT DATE: 12/23/2022 8:39:49 AM			DATE 12-23-2022						DRAWING NO.:	SHEET NO.:	
									K101A	33	



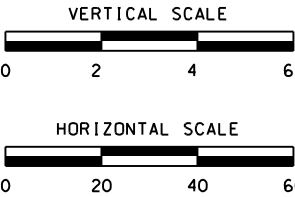
NORTHBOUND CONNECTION NON-REVENUE TRACK PROFILE



SB TRACK PROFILE

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



REV	DATE	DESCRIPTION

DESIGNED BY	CRR
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
	HDR Engineering, Inc.
10450 Holmes Road	Suite 600
Kansas City, MO 64131-3471	816-360-2700
Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

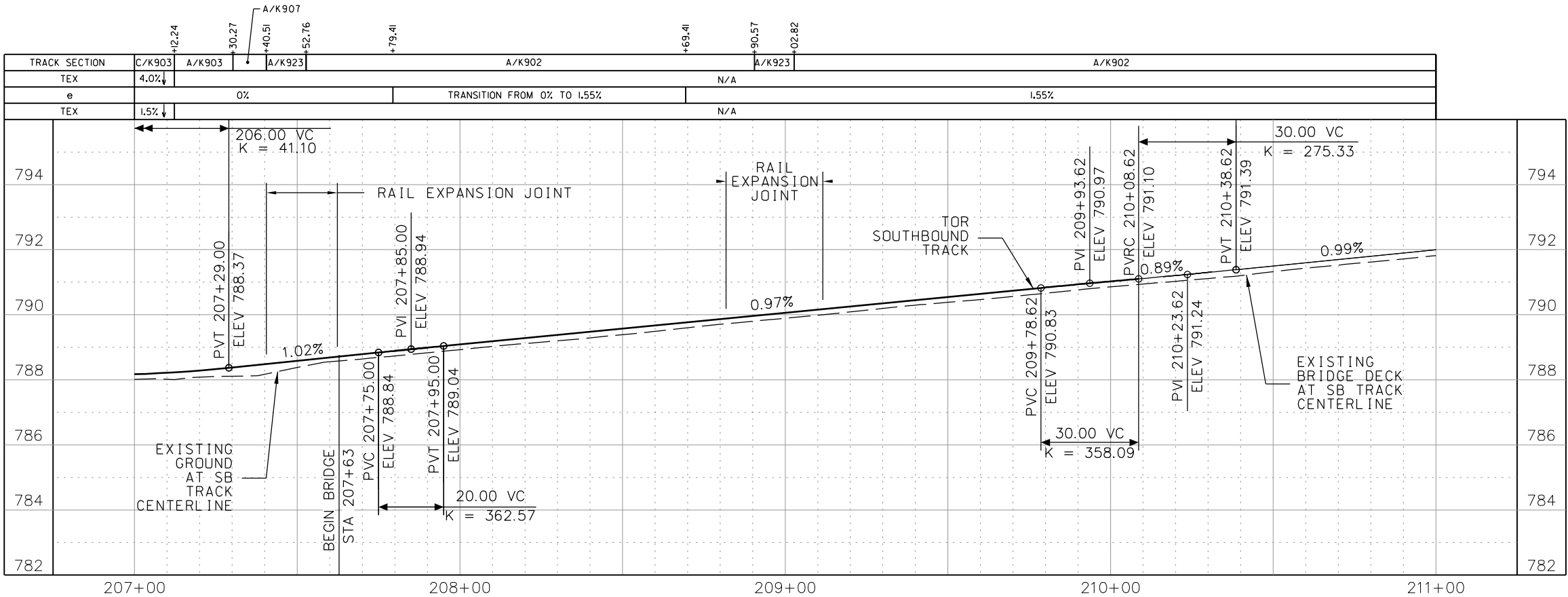
NORTHBOUND CONNECTION NON-REV TRACK PROFILE

STA -0+50 TO STA 3+00

SOUTHBOUND TRACK PROFILE

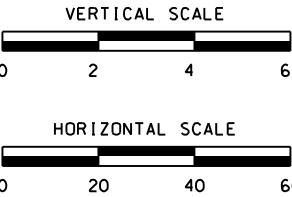
STA 203+00 TO STA 207+00

SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	FILENAME: K102A.dgn
CONTRACT NO.: CONTRACT NO. ***	VOLUME:
DRAWING NO.: K102A	SHEET NO.: 35



GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. THIS SHEET DEPICTS 112 TRAM RAIL EXPANSION JOINTS, FOR 115 RE RAIL EXPANSION JOINTS, SEE K300 SERIES SHEETS.



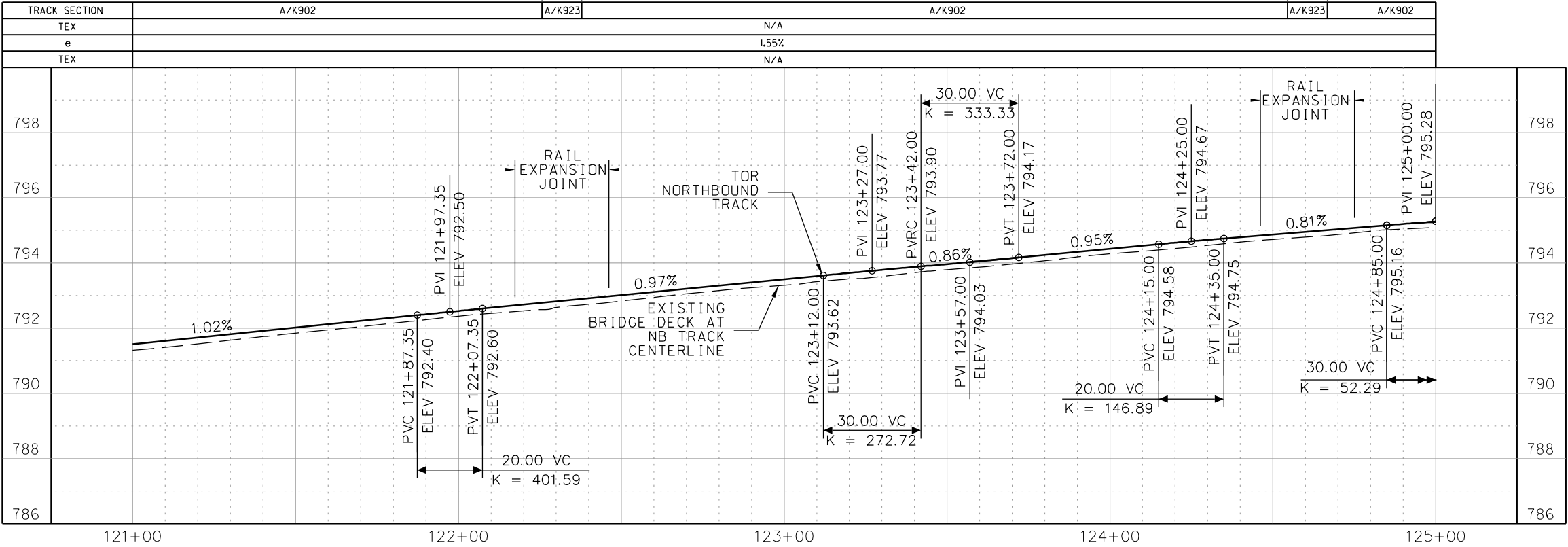
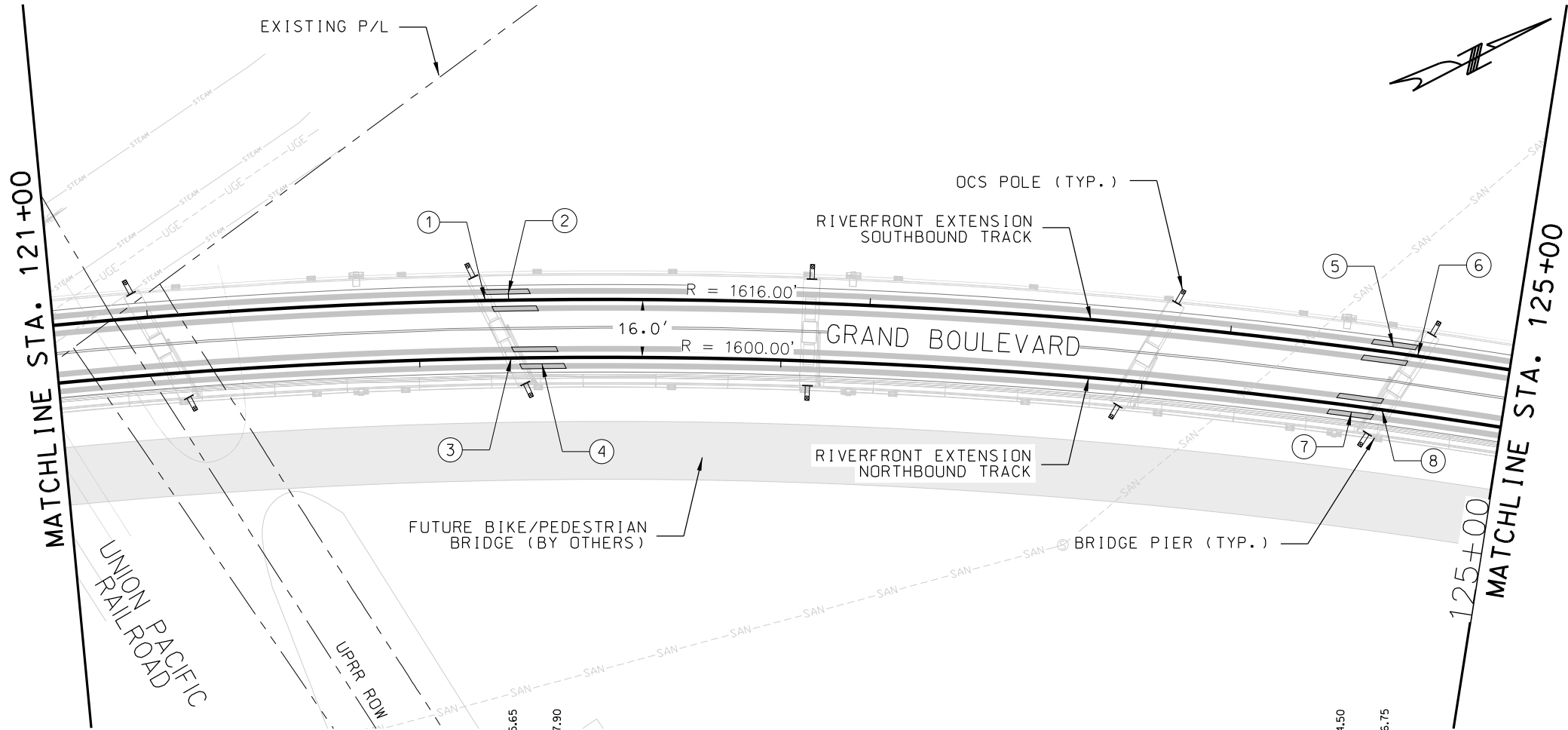
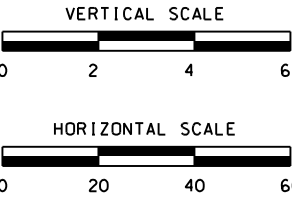
REV		DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	
				CHECKED BY	JWR												
				DRAWN BY	MMO			10450 Holmes Road						CONTRACT NO.:			
				CHECKED BY	JWR			Suite 600						CONTRACT NO. ***			
				APPROVED BY	NKS			Kansas City, MO 64131-3471						VOLUME:			
PLOT DATE: 12/23/2022		8:41:20 AM		DATE	12-23-2022	Certificate of Authority: 000856						DRAWING NO.:		SHEET NO.:			
								NOT FOR CONSTRUCTION				K103A		37			

CONSTRUCTION NOTES

- ① BRIDGE EXPANSION JOINT
SB STA 211+94
- ② RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA 212+00
REPLACE BRIDGE DECK FULL DEPTH
STA 211+79 TO STA 212+23
- ③ BRIDGE EXPANSION JOINT
NB STA 122+26
- ④ RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA 122+34
REPLACE BRIDGE DECK FULL DEPTH
STA 122+09 TO STA 122+52
- ⑤ RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA 214+45
REPLACE BRIDGE DECK FULL DEPTH
STA 214+22 TO STA 214+66
- ⑥ BRIDGE EXPANSION JOINT
SB STA 214+52
- ⑦ RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA 124+59
REPLACE BRIDGE DECK FULL DEPTH
STA 124+41 TO STA 124+84
- ⑧ BRIDGE EXPANSION JOINT
NB STA 124+67

GENERAL NOTES

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2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. THIS SHEET DEPICTS 112 TRAM RAIL EXPANSION JOINTS, FOR 115 RE RAIL EXPANSION JOINTS, SEE K300 SERIES SHEETS.



REV	DATE	DESCRIPTION

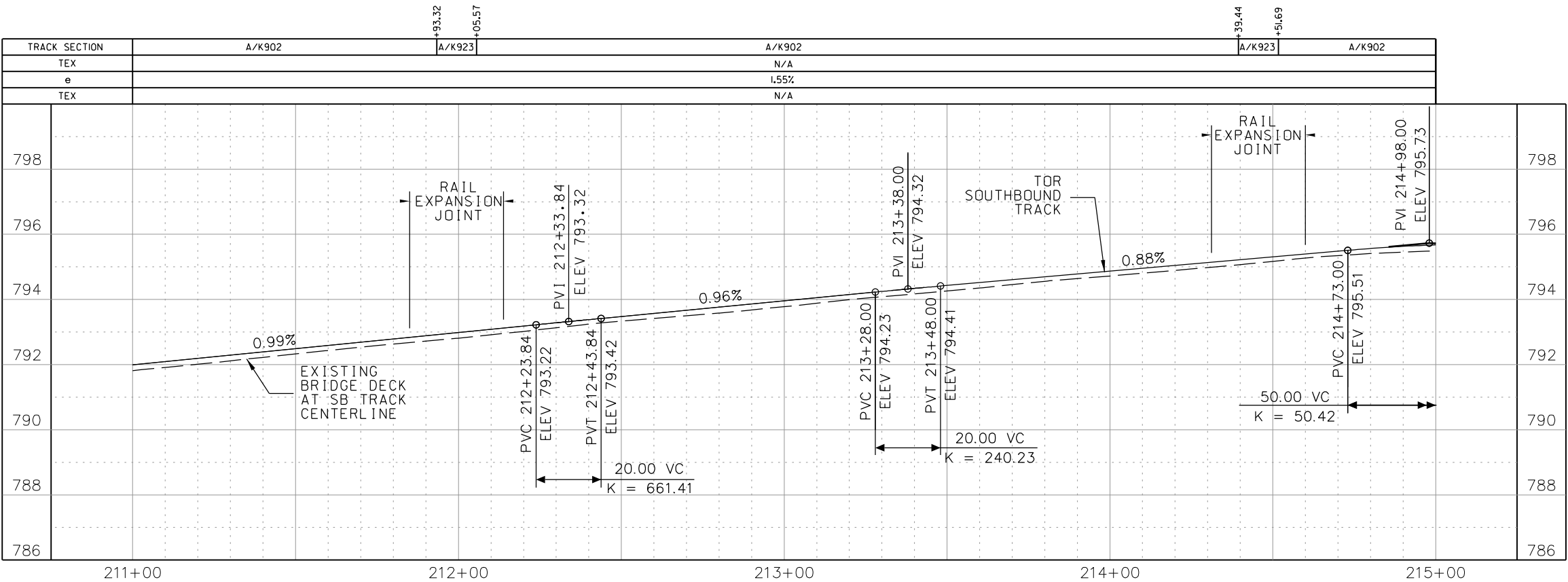
DESIGNED BY	CRR
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

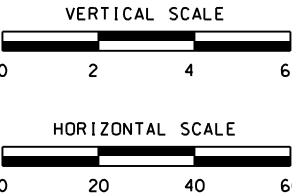
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
NORTHBOUND TRACK PLAN AND PROFILE STA 121+00 TO STA 125+00	

SCALE FOR 22"x34": H ₁ P = 20' V ₁ P = 2'	FILENAME: K104.dgn
CONTRACT NO.: CONTRACT NO. ***	VOLUME:
DRAWING NO.: K104	SHEET NO.: 38

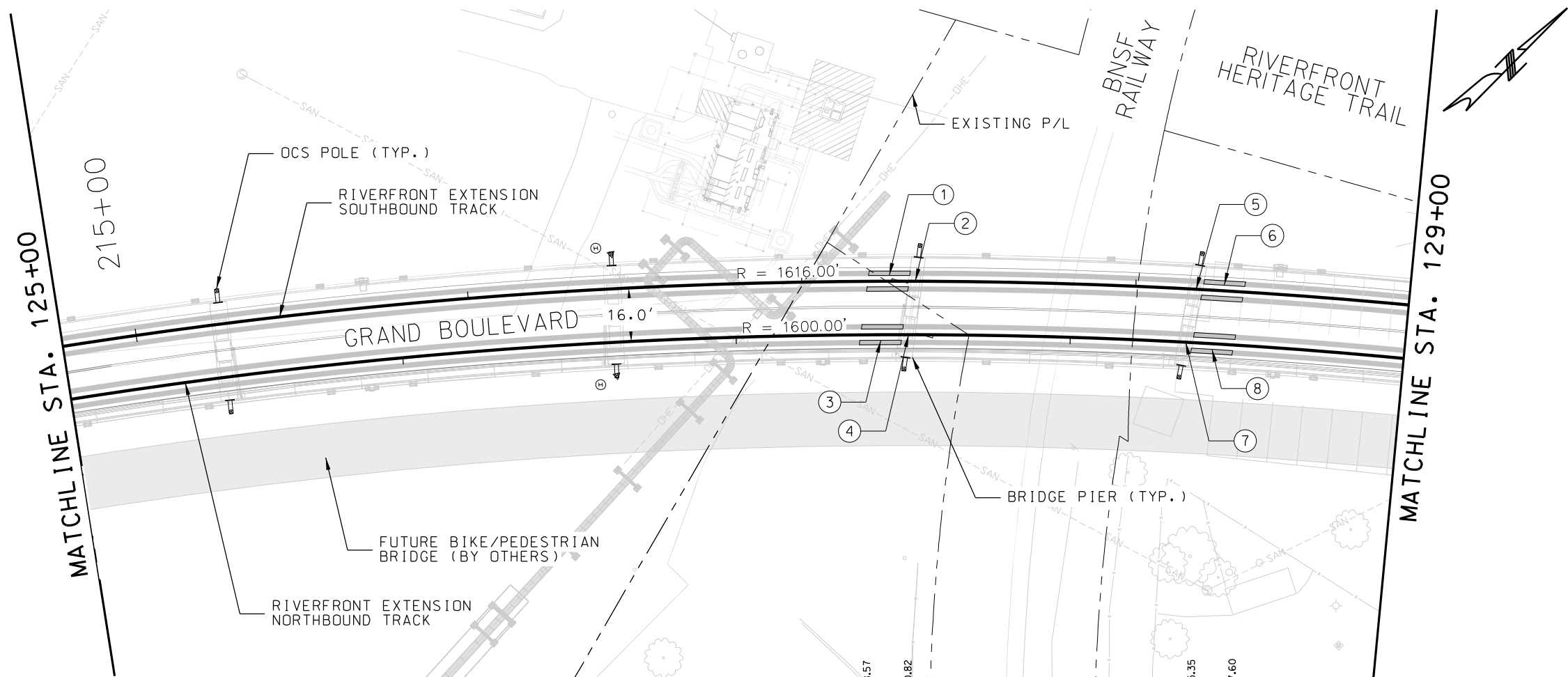


GENERAL NOTES

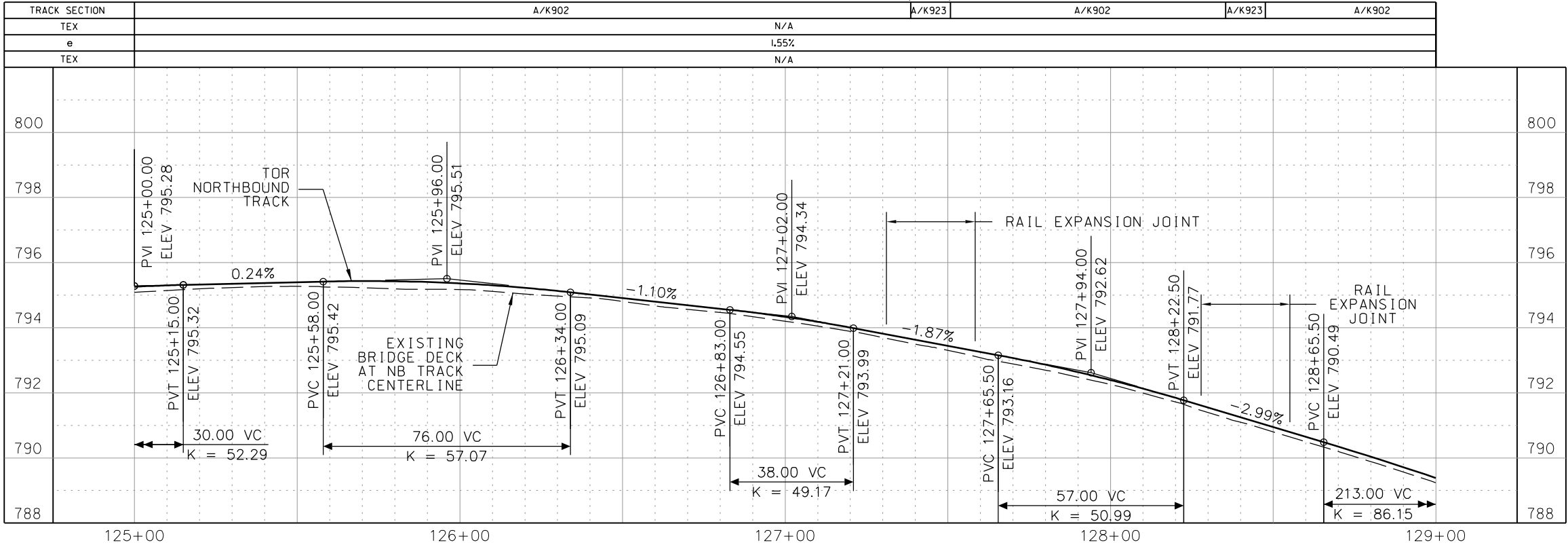
1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
5. THIS SHEET DEPICTS 112 TRAM RAIL EXPANSION JOINTS, FOR 115 RE RAIL EXPANSION JOINTS, SEE K300 SERIES SHEETS.



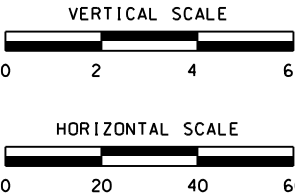
REV DATE DESCRIPTION			DESIGNED BY CRR				ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	
			CHECKED BY JWR						SOUTHBOUND TRACK		FILENAME: K104A.dgn	
			DRAWN BY MMO				10450 Holmes Road		PROFILE		CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY JWR				Suite 600		STA 211+00 TO STA 215+00		VOLUME:	
			APPROVED BY NKS				Kansas City, MO 64131-3471				DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022 8:41:59 AM			DATE 12-23-2022		12-23-2022 JAMES W. RICE - ENGINEER LICENSE NO. 2012018122		NOT FOR CONSTRUCTION		K104A 39			



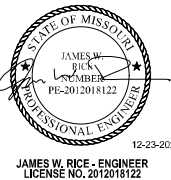
- CONSTRUCTION NOTES
- RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA 217+26
REPLACE BRIDGE DECK FULL DEPTH STA 217+07 TO STA 217+44
 - BRIDGE EXPANSION JOINT
SB STA 217+34
 - RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA 127+43
REPLACE BRIDGE DECK FULL DEPTH STA 127+27 TO STA 127+63
 - BRIDGE EXPANSION JOINT
NB STA 127+52
 - BRIDGE EXPANSION JOINT
SB STA 218+18
 - RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA 218+26
REPLACE BRIDGE DECK FULL DEPTH STA 218+06 TO STA 218+43
 - BRIDGE EXPANSION JOINT
NB STA 128+35
 - RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA 128+43
REPLACE BRIDGE DECK FULL DEPTH STA 128+25 TO STA 128+61

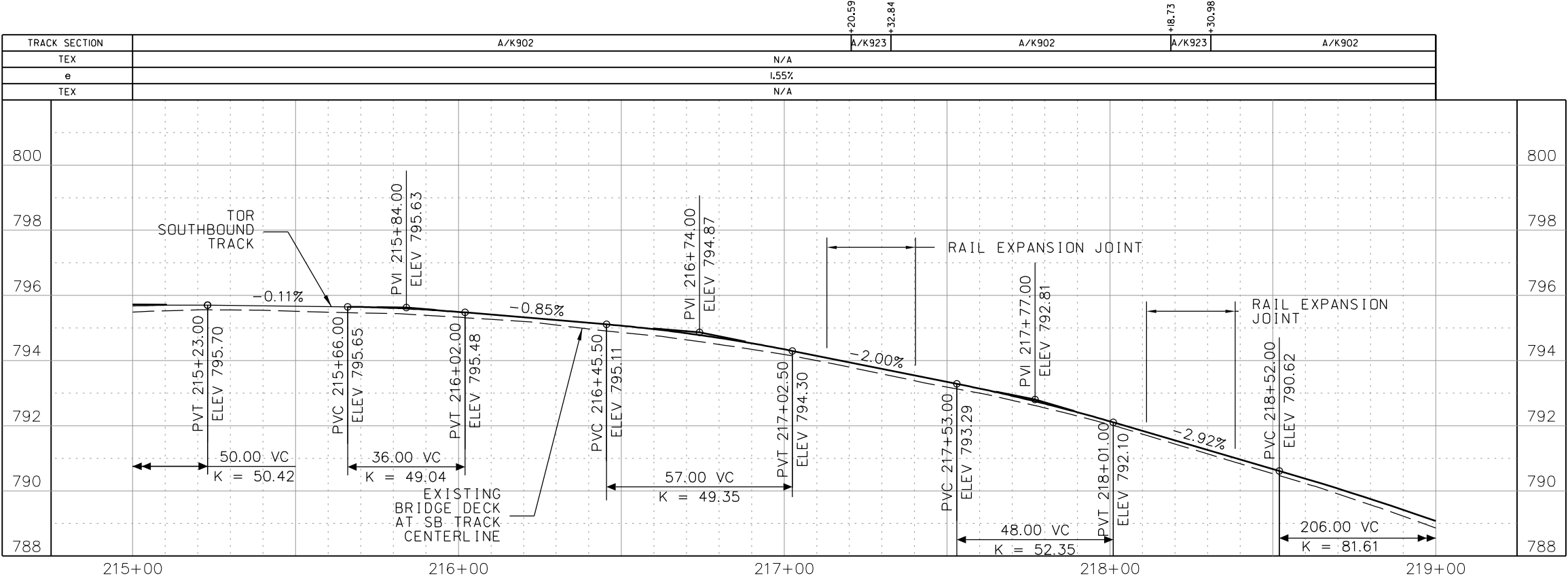


- GENERAL NOTES
- SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
 - ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
 - ALL CURVES ARE BASED ON ARC DEFINITION.
 - PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
 - THIS SHEET DEPICTS 112 TRAM RAIL EXPANSION JOINTS, FOR 115 RE RAIL EXPANSION JOINTS, SEE K300 SERIES SHEETS.



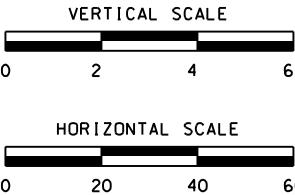
REV	DATE	DESCRIPTION	DESIGNED BY	CRR	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H:1" = 20' V:1" = 2'
			CHECKED BY	JWR	HDR	HDR Engineering, Inc.	NORTHBOUND TRACK	FILENAME: K105.dgn
			DRAWN BY	MMO	10450 Holmes Road		PLAN AND PROFILE	CONTRACT NO.:
					Suite 600		STA 125+00 TO STA 129+00	CONTRACT NO. ***
			CHECKED BY	JWR	Kansas City, MO 64131-3471			VOLUME:
			APPROVED BY	NKS	816-360-2700			DRAWING NO.:
					Certificate of Authority: 000856			SHEET NO.:
								40
PLOT DATE: 12/23/2022			8:42:33 AM		DATE 12-23-2022		NOT FOR CONSTRUCTION	





GENERAL NOTES

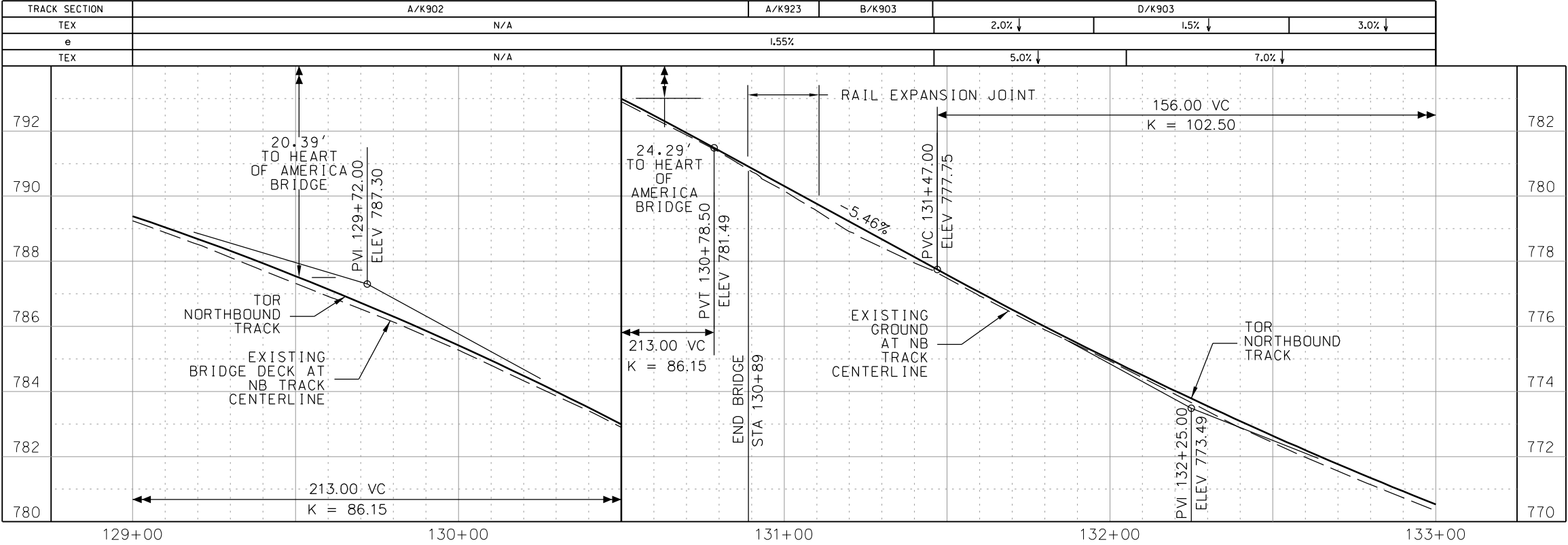
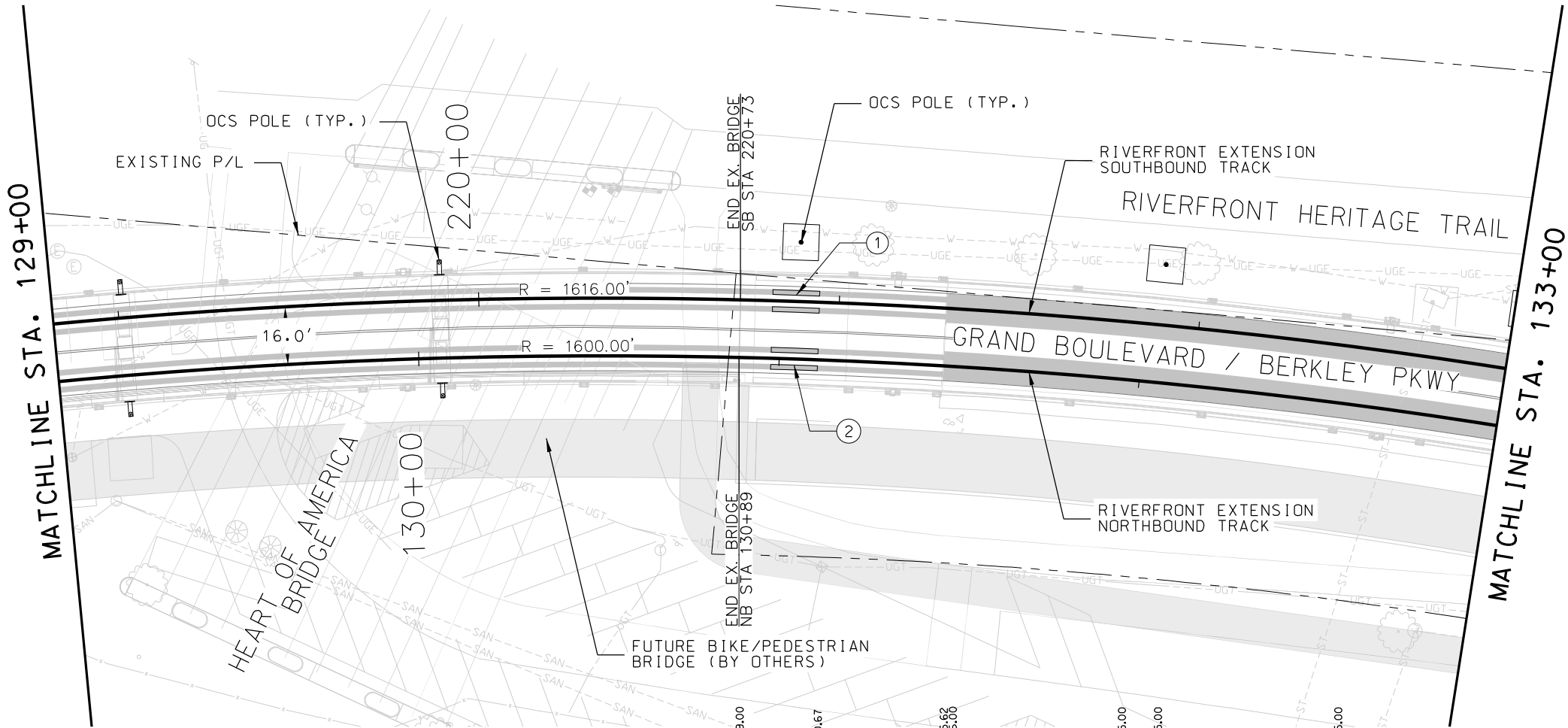
- 1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
- 2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
- 3. ALL CURVES ARE BASED ON ARC DEFINITION.
- 4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
- 5. THIS SHEET DEPICTS 112 TRAM RAIL EXPANSION JOINTS, FOR 115 RE RAIL EXPANSION JOINTS, SEE K300 SERIES SHEETS.



REV DATE DESCRIPTION			DESIGNED BY CRR		JAMES W. RICE - ENGINEER LICENSE NO. 2012018122	ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": H:V = 20': 1" V: 1" = 2'	
			CHECKED BY JWR			HDR Engineering, Inc.		SOUTHBOUND TRACK		FILENAME: K105A.dgn	
			DRAWN BY MMO			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		PROFILE		CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY JWR					STA 215+00 TO STA 219+00		VOLUME:	
			APPROVED BY NKS							DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022 8:42:36 AM			DATE 12-23-2022		NOT FOR CONSTRUCTION				K105A 41		

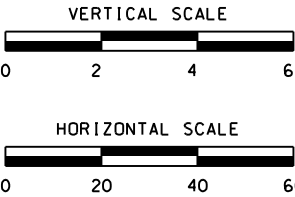
CONSTRUCTION NOTES

- ① RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA. 220+88
REPLACE APPROACH SLAB FULL DEPTH
STA 220+73 TO STA 221+03
- ② RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA. 131+04
REPLACE APPROACH SLAB FULL DEPTH
STA 130+89 TO STA 131+19



GENERAL NOTES

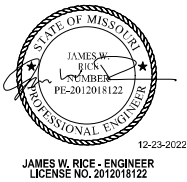
- SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
- ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
- ALL CURVES ARE BASED ON ARC DEFINITION.
- PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
- THIS SHEET DEPICTS 112 TRAM RAIL EXPANSION JOINTS, FOR 115 RE RAIL EXPANSION JOINTS, SEE K300 SERIES SHEETS.



REV	DATE	DESCRIPTION

PLOT DATE: 12/23/2022 8:43:13 AM

DESIGNED BY	CRR
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS
DATE	12-23-2022

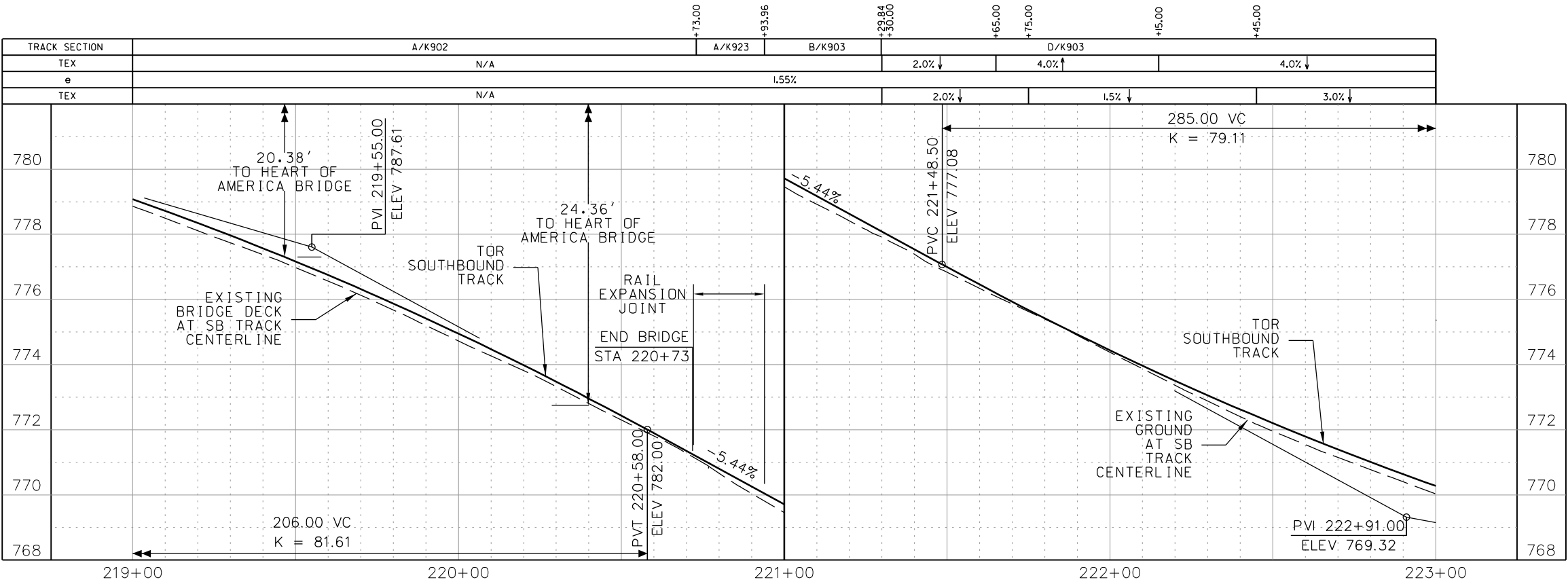


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

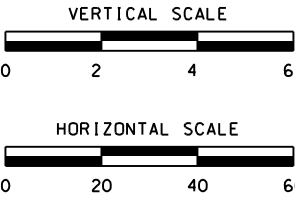
NORTHBOUND TRACK
PLAN AND PROFILE
STA 129+00 TO STA 133+00

SCALE FOR 22"x34": H:V = 20' : 1" V: H = 2' : 1"
FILENAME: K106.dgn
CONTRACT NO.: CONTRACT NO. ***
VOLUME: DRAWING NO.: SHEET NO.:
K106 42

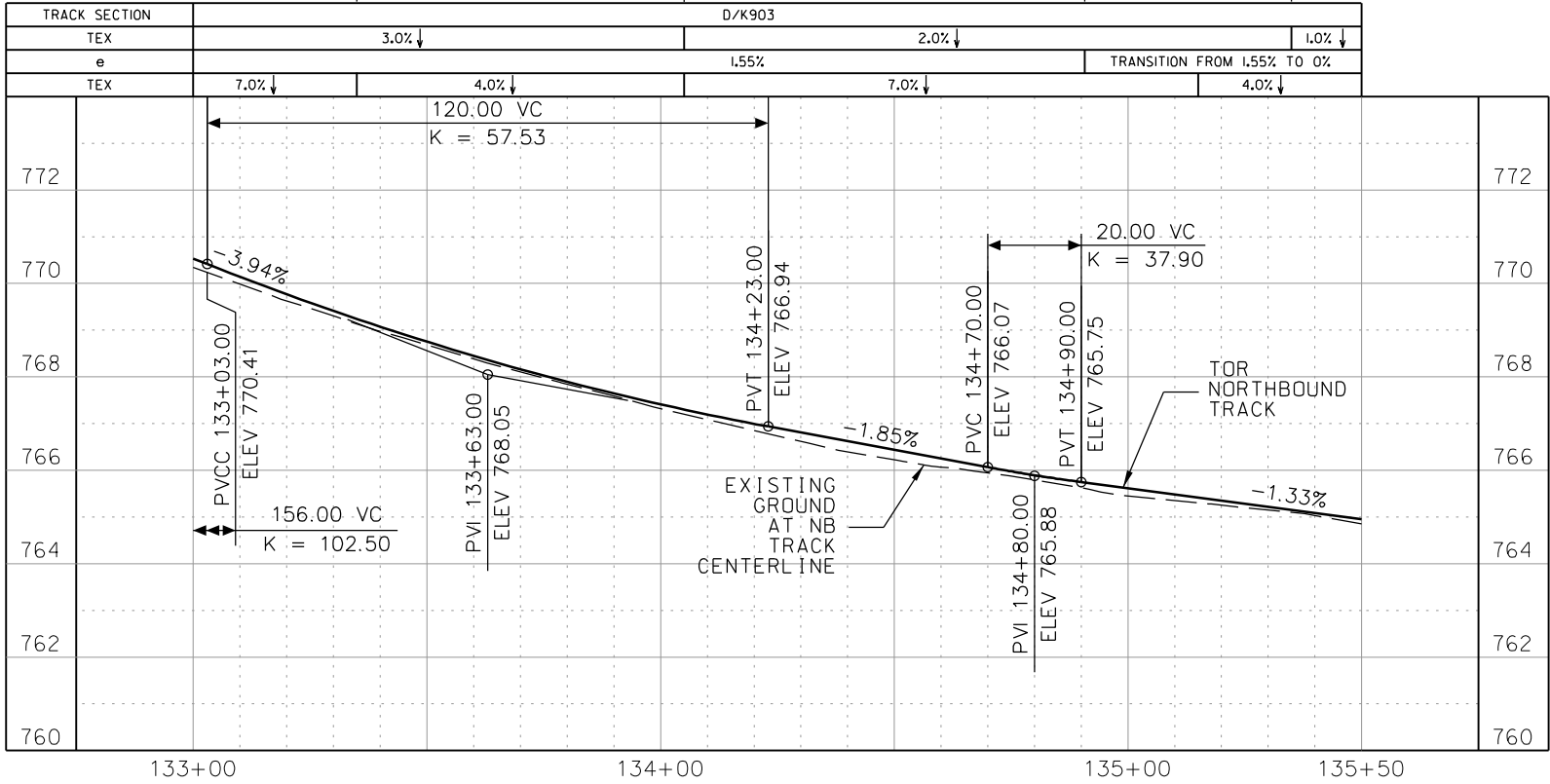
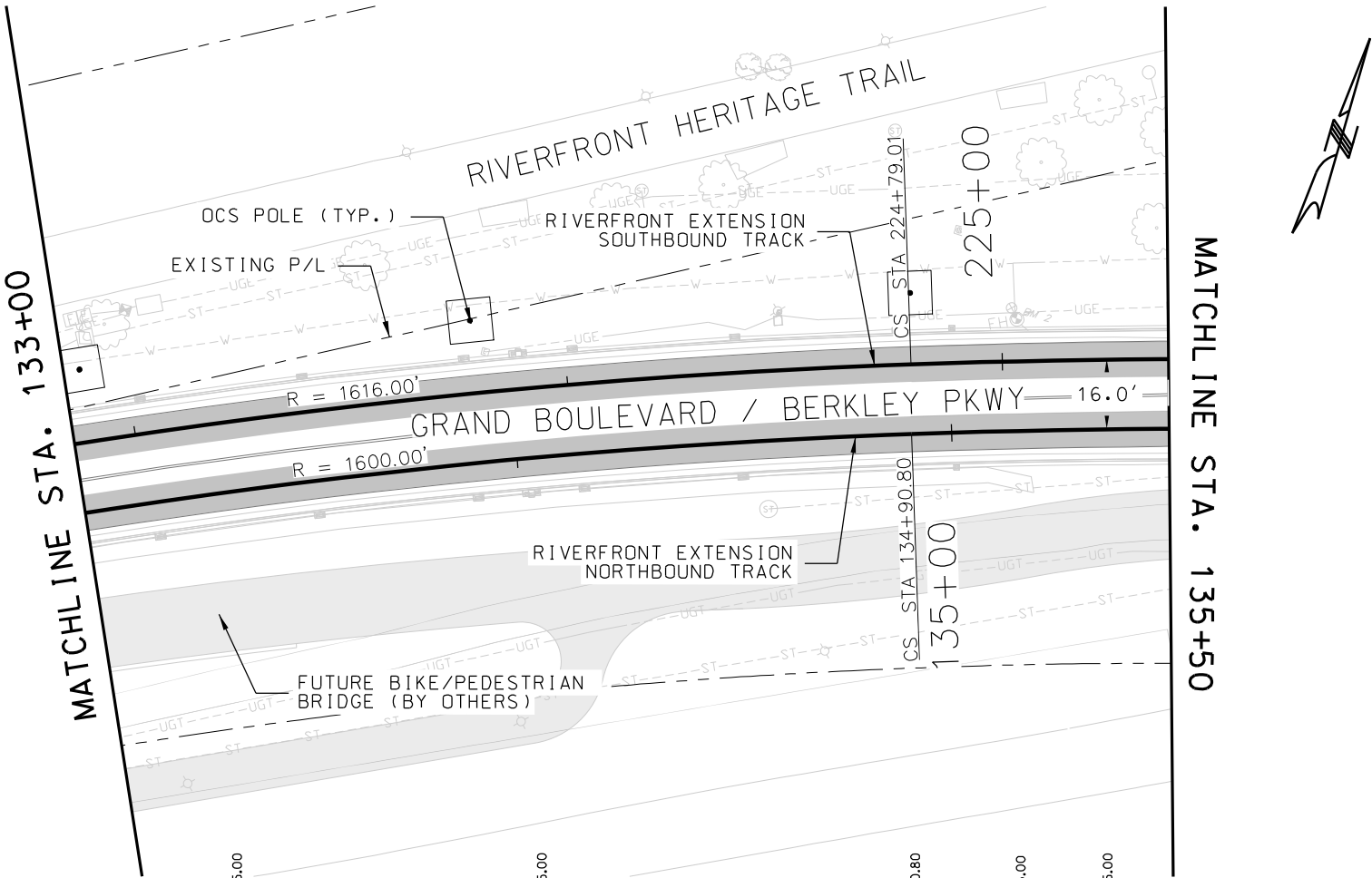


GENERAL NOTES

- 1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
- 2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
- 3. ALL CURVES ARE BASED ON ARC DEFINITION.
- 4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.
- 5. THIS SHEET DEPICTS 112 TRAM RAIL EXPANSION JOINTS, FOR 115 RE RAIL EXPANSION JOINTS, SEE K300 SERIES SHEETS.

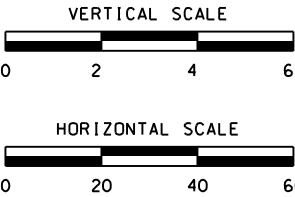


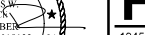
REV	DATE	DESCRIPTION	DESIGNED BY CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'		
			CHECKED BY JWR			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856					
			DRAWN BY MMO								
			CHECKED BY JWR								
			APPROVED BY NKS								
PLOT DATE: 12/23/2022			8:43:16 AM	DATE	12-23-2022	NOT FOR CONSTRUCTION			SOUTHBOUND TRACK PROFILE STA 219+00 TO STA 223+00	DRAWING NO.: K106A	SHEET NO.: 43

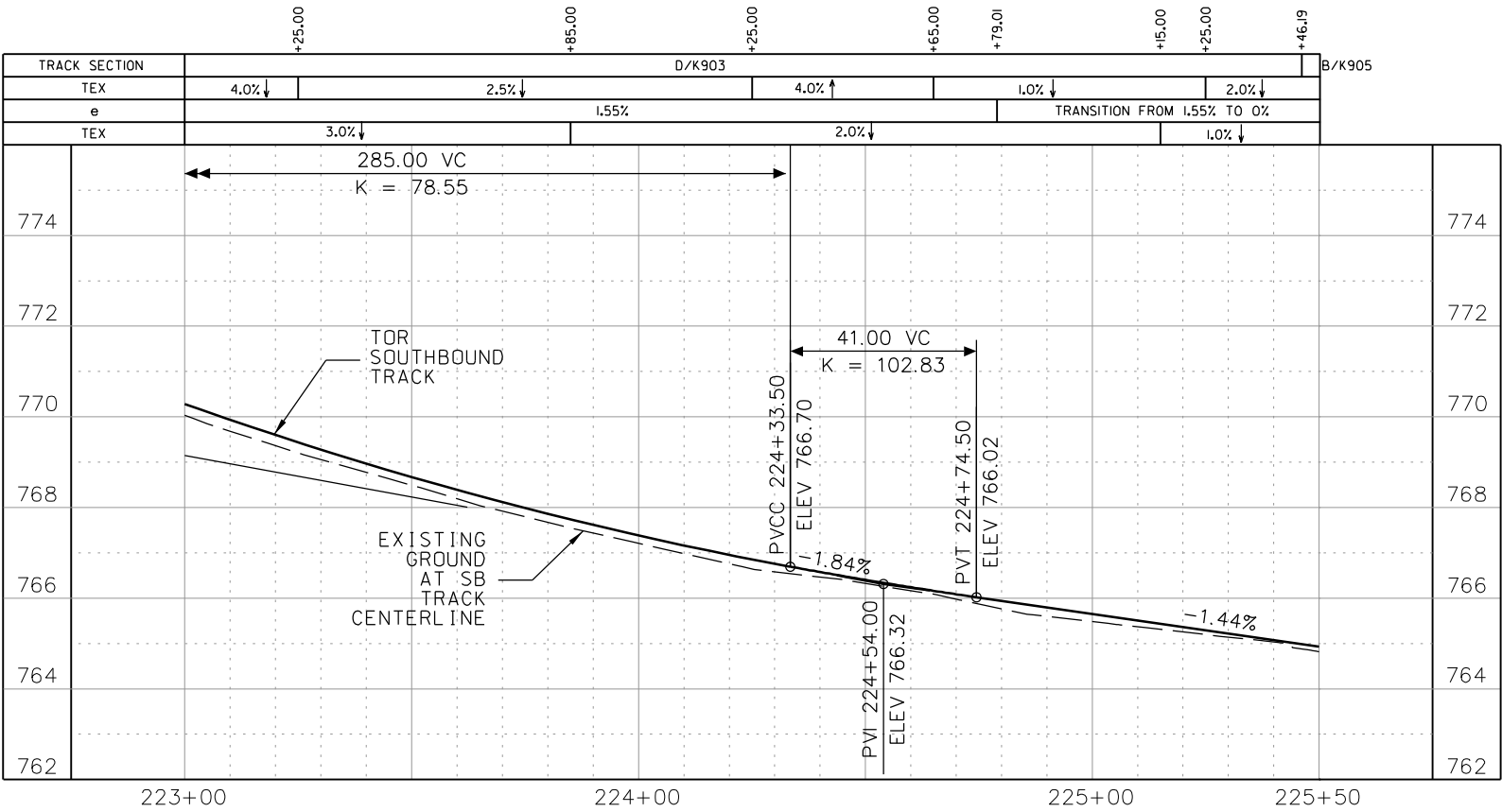


GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

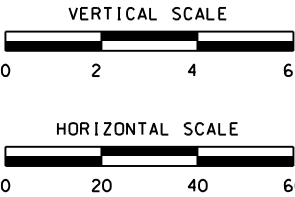


REV	DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: V = 20' : 1" V: 1" = 2'
			CHECKED BY	JWR			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NORTHBOUND TRACK PLAN AND PROFILE STA 133+00 TO STA 135+50		FILENAME: K107.dgn
			DRAWN BY	MMO						CONTRACT NO.:
			CHECKED BY	JWR						CONTRACT NO. ***
			APPROVED BY	NKS						VOLUME: 1
PLOT DATE: 12/23/2022			8:43:46 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:
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GENERAL NOTES

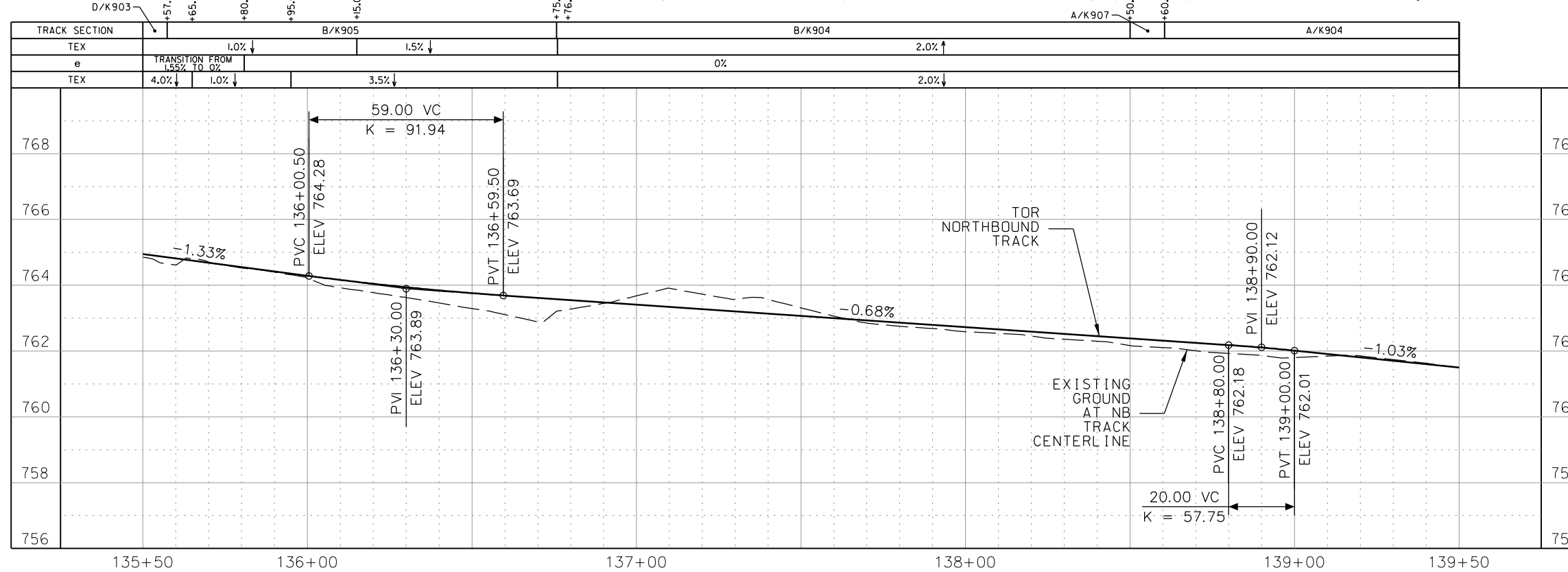
- 1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
- 2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
- 3. ALL CURVES ARE BASED ON ARC DEFINITION.
- 4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



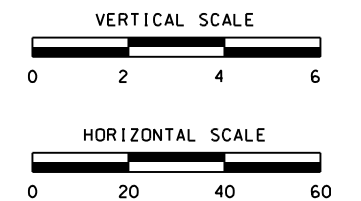
REV	DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'		
			CHECKED BY	JWR				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			SOUTHBOUND TRACK PROFILE STA 223+00 TO STA 225+50	FILENAME:
			DRAWN BY	MMO								CONTRACT NO.:
			CHECKED BY	JWR								CONTRACT NO. ***
			APPROVED BY	NKS								VOLUME:
PLOT DATE: 12/23/2022			8:43:49 AM		DATE: 12-23-2022		NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:		
									K107A	45		

① STA. 138+54.50
INSTALL TRANSITION RAIL.
SEE SHEET K907 FOR DETAILS.

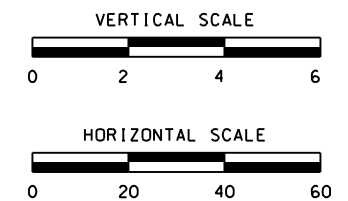
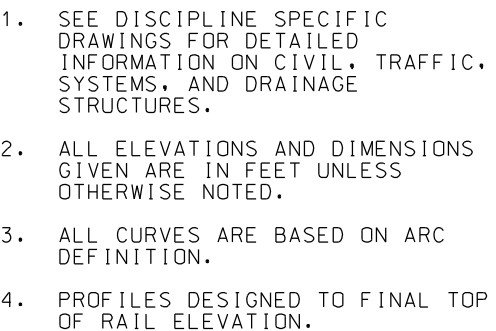
② STA. 228+54.50
INSTALL TRANSITION RAIL.
SEE SHEET K907 FOR DETAILS.



1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



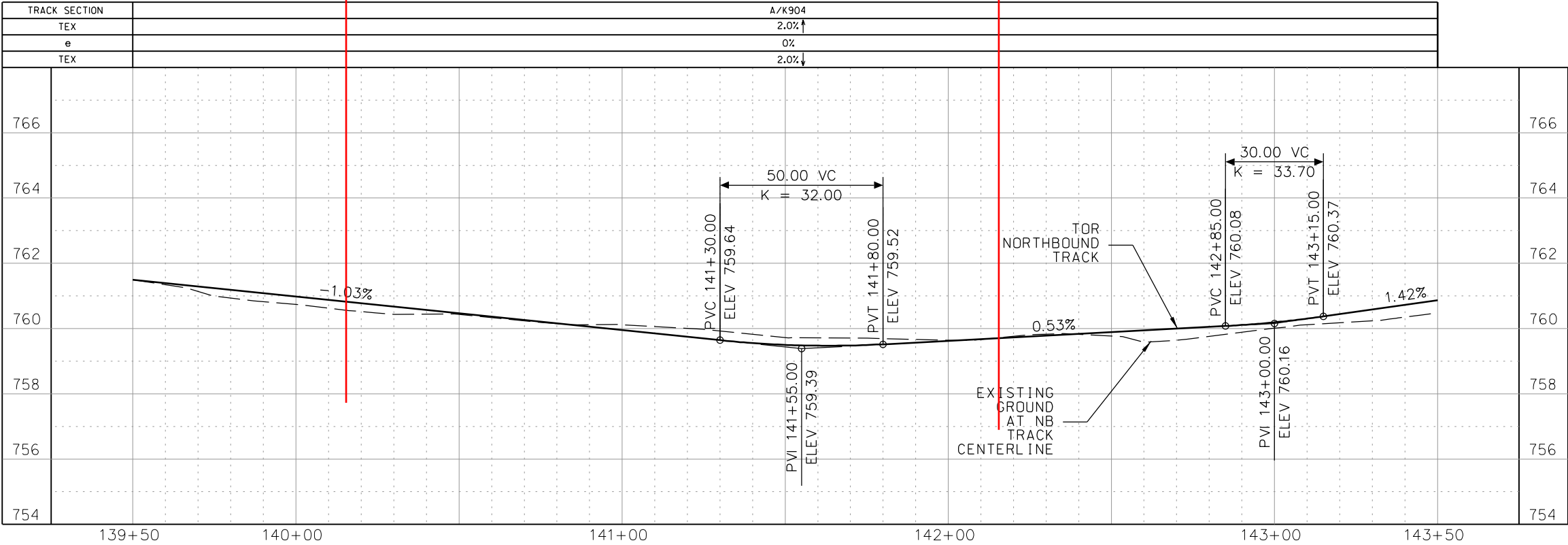
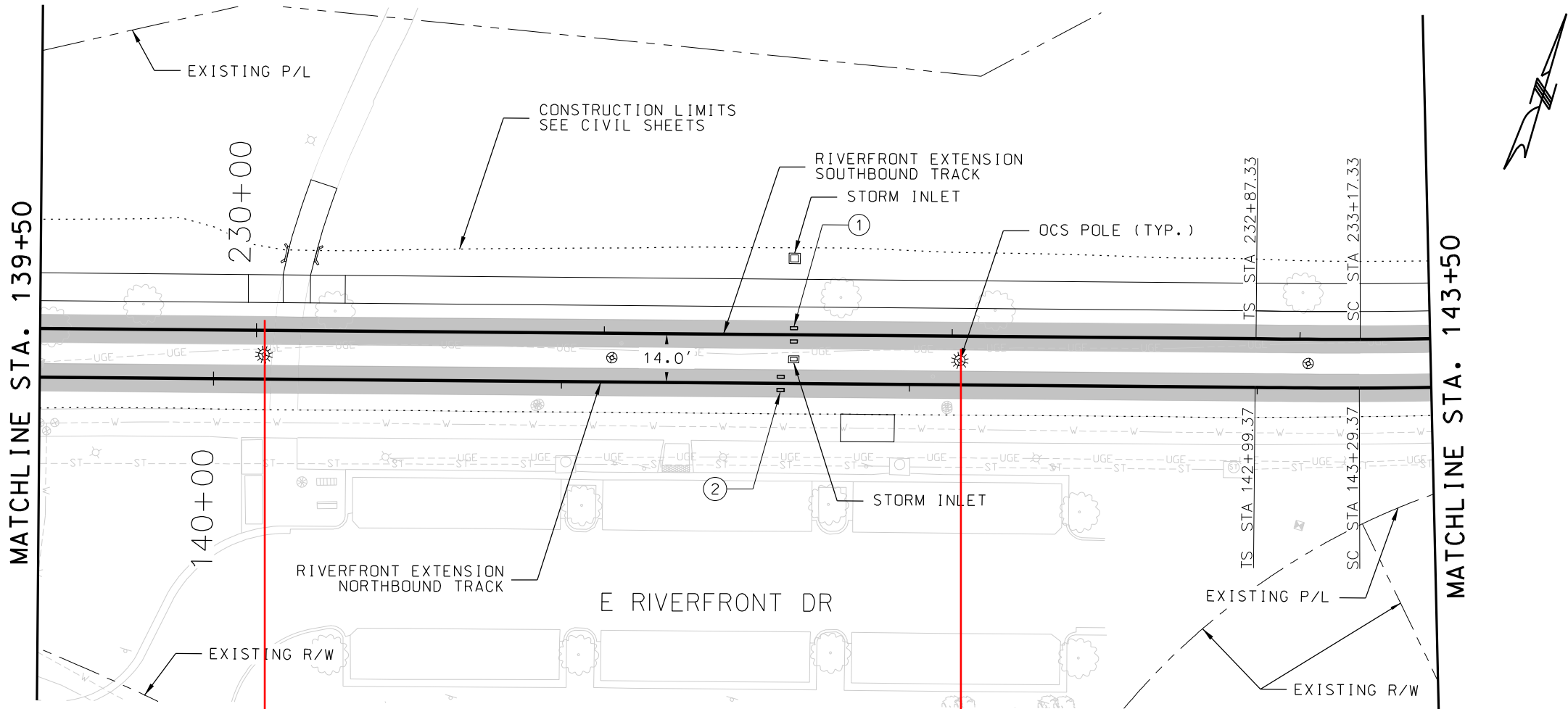
REV	DATE	DESCRIPTION	DESIGNED BY	CRR		 12-23-2022 JAMES W. RICE - ENGINEER LICENSE NO. 2012018122	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION NORTHBOUND TRACK PLAN AND PROFILE STA 135+50 TO STA 139+50	SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'
			CHECKED BY	JWR			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	FILENAME: K108.dgn		
			DRAWN BY	MMO				CONTRACT NO.: CONTRACT NO. ***		
			CHECKED BY	JWR				VOLUME: 1		
			APPROVED BY	NKS				DRAWING NO.: K108		
PLOT DATE: 12/23/2022			2:59:00 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		SHEET NO.: 46	



REV	DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION SOUTHBOUND TRACK PROFILE STA 225+50 TO STA 229+50	SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'
			CHECKED BY	JWR			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		FILENAME:
			DRAWN BY	MMO						K108A.dgn
			CHECKED BY	JWR						CONTRACT NO.:
			APPROVED BY	NKS						CONTRACT NO. ***
										VOLUME:
PLOT DATE: 12/23/2022		8:43:55 AM	DATE	12-23-2022					DRAWING NO.:	SHEET NO.:
									K108A	47

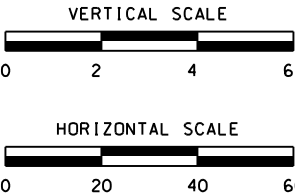
CONSTRUCTION NOTES

- ① SB STA 231+54.52
INSTALL TRACK DRAIN
- ② NB STA 141+63.00
INSTALL TRACK DRAIN



GENERAL NOTES

- SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
- ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
- ALL CURVES ARE BASED ON ARC DEFINITION.
- PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



REV	DATE	DESCRIPTION

DESIGNED BY	CRR
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS

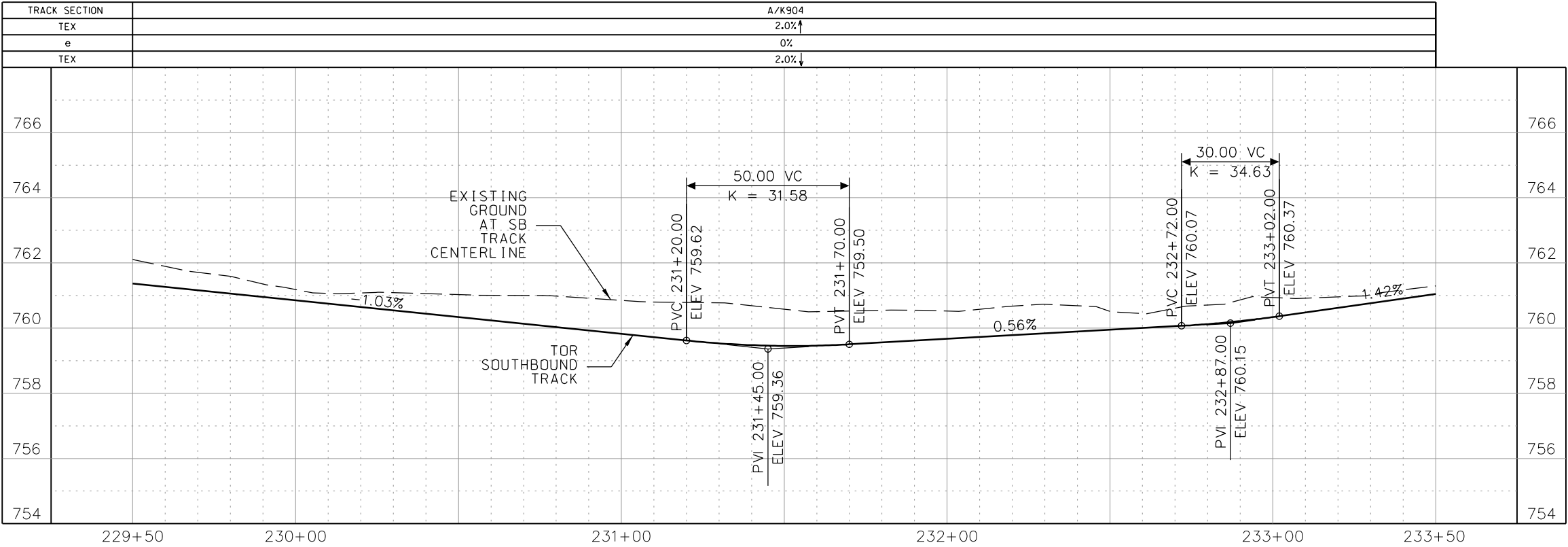


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

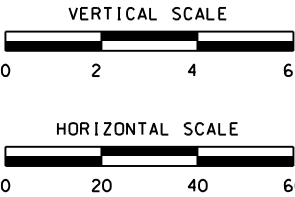
NORTHBOUND TRACK
PLAN AND PROFILE
STA 139+50 TO STA 143+50

SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	FILENAME: K109.dgn
CONTRACT NO.: CONTRACT NO. ***	VOLUME:
DRAWING NO.: K109	SHEET NO.: 48



GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



REV DATE DESCRIPTION			DESIGNED BY CRR				ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	
			CHECKED BY JWR				FILENAME: K109A.dgn				CONTRACT NO.: CONTRACT NO. ***	
			DRAWN BY MMO				CONTRACT NO.: CONTRACT NO. ***				VOLUME:	
			CHECKED BY JWR				CONTRACT NO.: CONTRACT NO. ***				DRAWING NO.: K109A	
			APPROVED BY NKS				CONTRACT NO.: CONTRACT NO. ***				SHEET NO.: 49	

PLLOT DATE: 12/23/2022

8:44:02 AM

DATE 12-23-2022

HDR Engineering, Inc.

10450 Holmes Road

Suite 600

Kansas City, MO 64131-3471

816-360-2700

Certificate of Authority: 000856

NOT FOR CONSTRUCTION

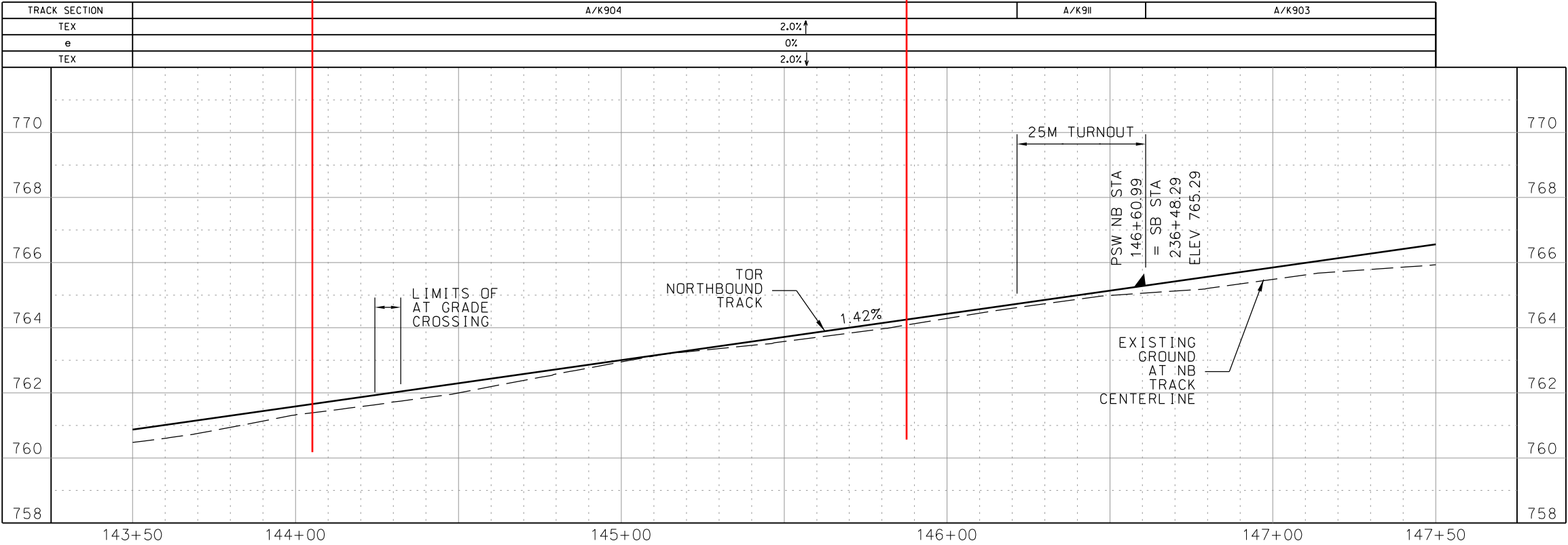
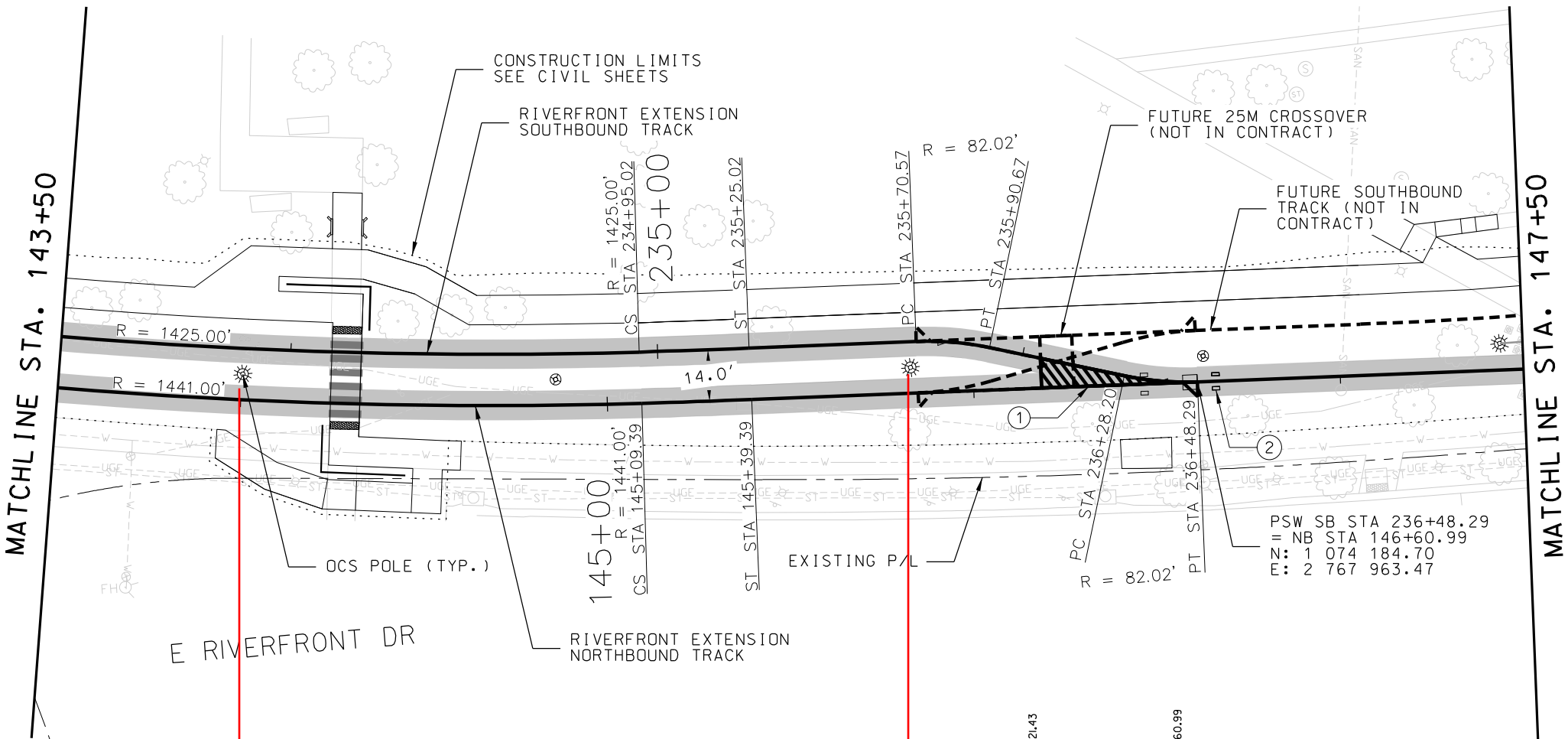
SOUTHBOUND TRACK

PROFILE

STA 229+50 TO STA 233+50

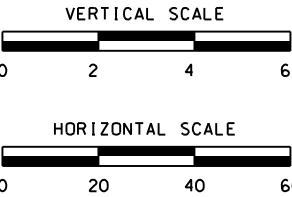
CONSTRUCTION NOTES

- ① TURNOUT #14661
INSTALL A 25M STRAIGHT FROG POWERED
EMBEDDED TURNOUT. SEE SHEET K911.
- ② NB STA 236+53.29
INSTALL TRACK DRAIN



GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



REV	DATE	DESCRIPTION

DESIGNED BY	CRR
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS

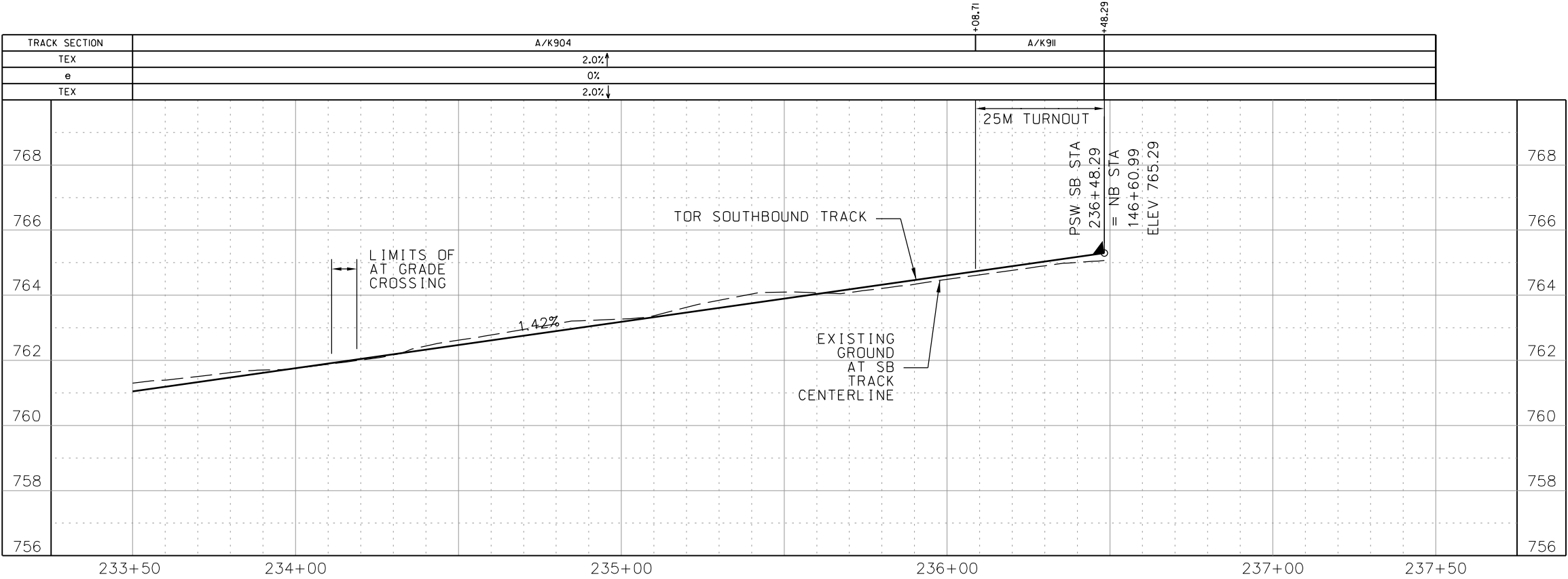


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

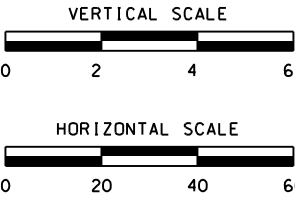
NORTHBOUND TRACK
PLAN AND PROFILE
STA 143+50 TO STA 147+50

SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	FILENAME: K110.dgn
CONTRACT NO.: CONTRACT NO. ***	VOLUME:
DRAWING NO.: K110	SHEET NO.: 50



GENERAL NOTES

- 1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
- 2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
- 3. ALL CURVES ARE BASED ON ARC DEFINITION.
- 4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



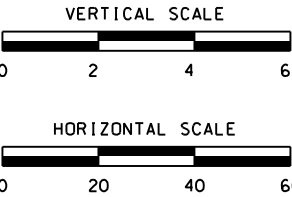
REV DATE DESCRIPTION			DESIGNED BY CRR				ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION SOUTHBOUND TRACK PROFILE STA 233+50 TO STA 237+50		SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	
			CHECKED BY JWR				FILENAME: K110A.dgn					
			DRAWN BY MMO				CONTRACT NO.: CONTRACT NO. ***					
			CHECKED BY JWR				VOLUME: 1					
			APPROVED BY NKS				DRAWING NO.: K110A					
PLOT DATE: 12/23/2022 8:44:10 AM			DATE 12-23-2022				NOT FOR CONSTRUCTION		SHEET NO.: 51			

CONSTRUCTION NOTES

- ① INSTALL CURB STOP AND PLANTER BOX AT END OF TRACK. SEE SHEET K92I.
- ② NB STA 150+80.51
INSTALL TRACK DRAIN

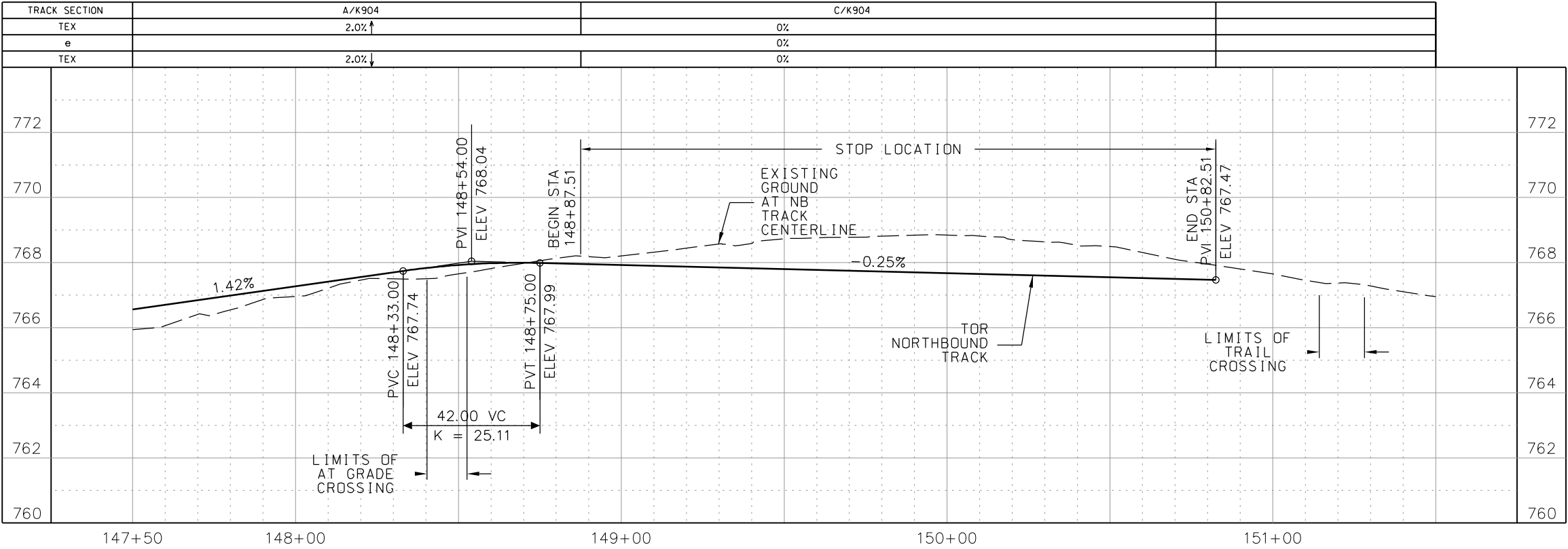
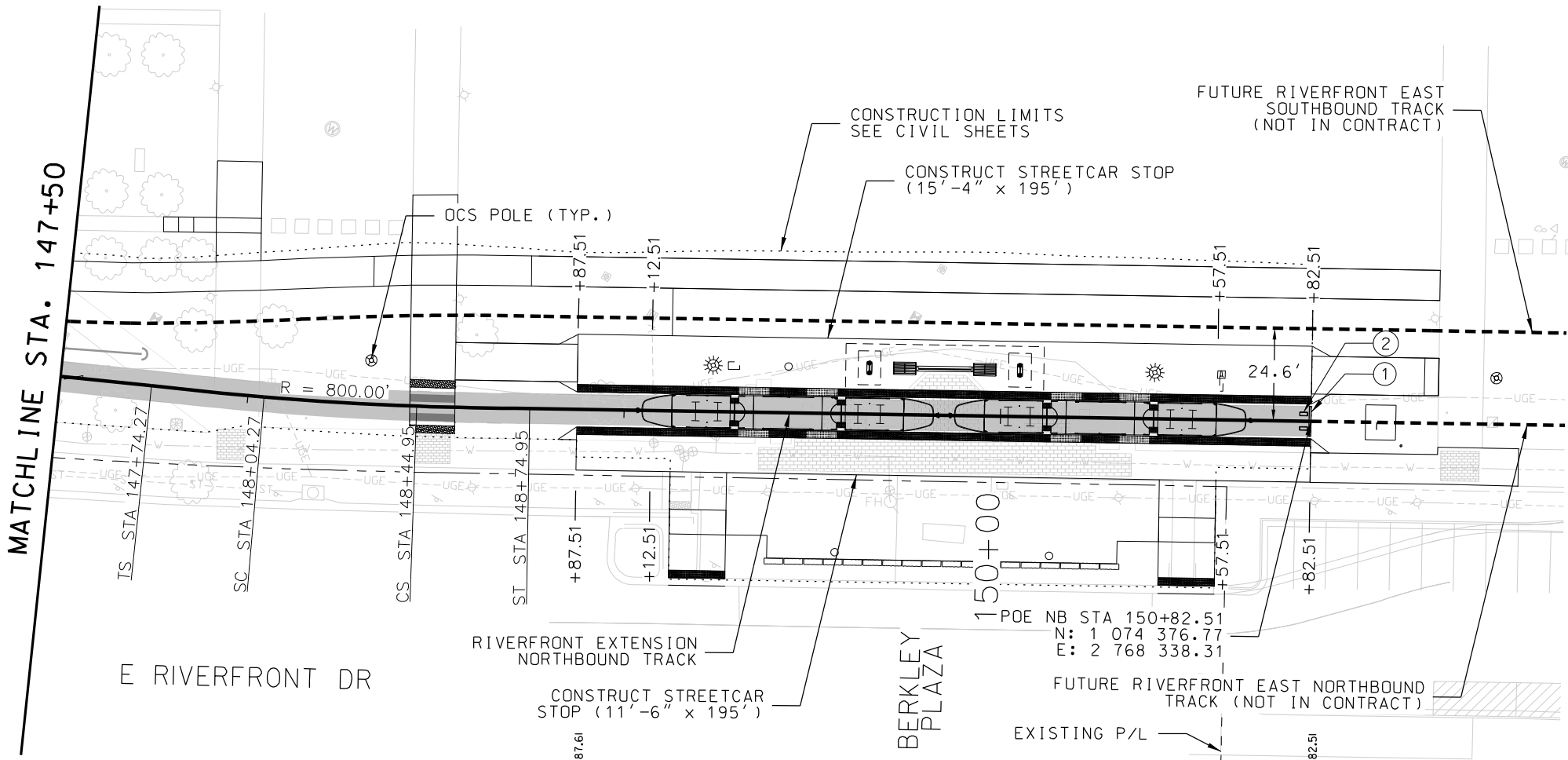
GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



SCALE FOR 22"x34": H ₁ P = 20' V ₁ P = 2'	
FILENAME: K111.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: DRAWING NO.:	
SHEET NO.:	

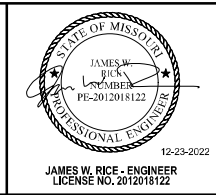
K111 52



REV	DATE	DESCRIPTION

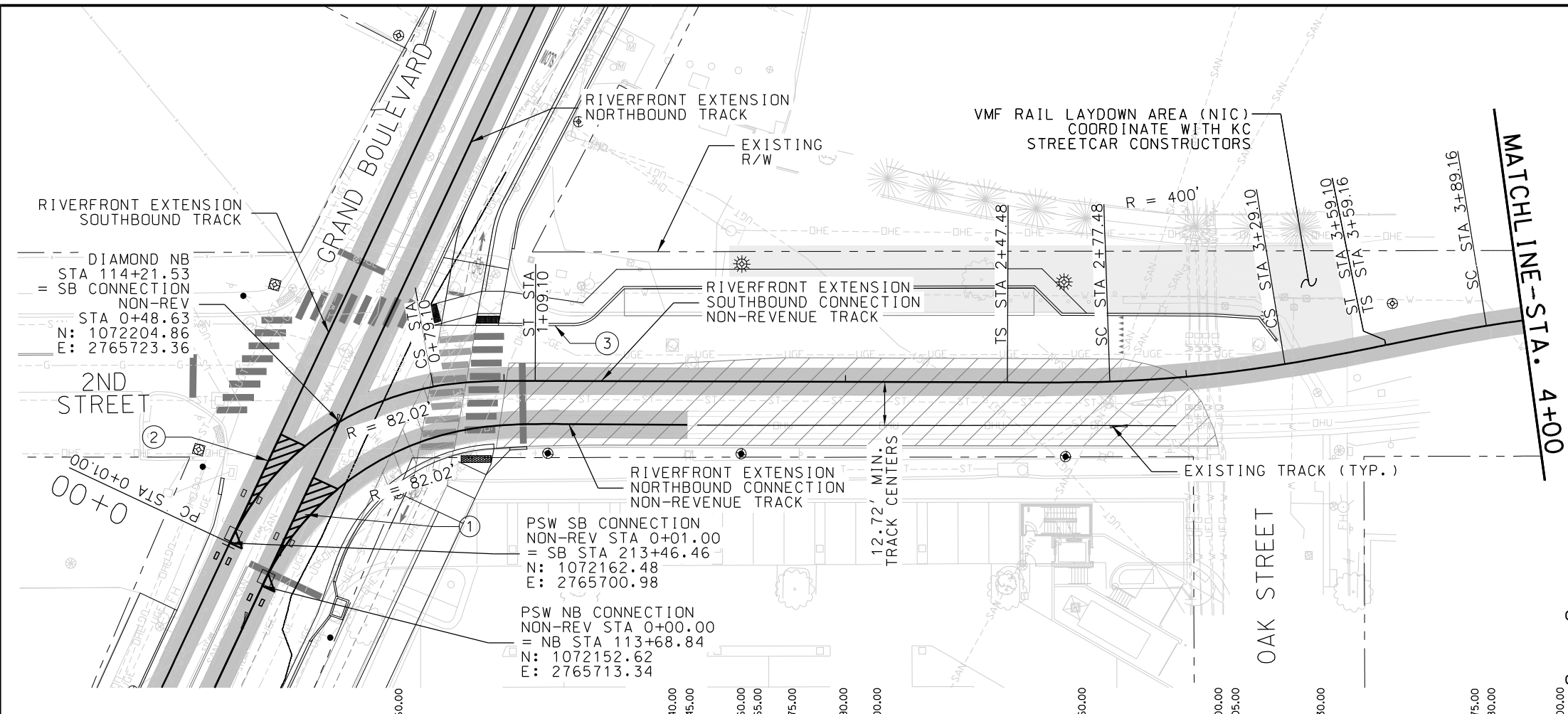
PLOT DATE: 12/23/2022 2:58:00 PM

DESIGNED BY	CRR
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS
DATE	12-23-2022



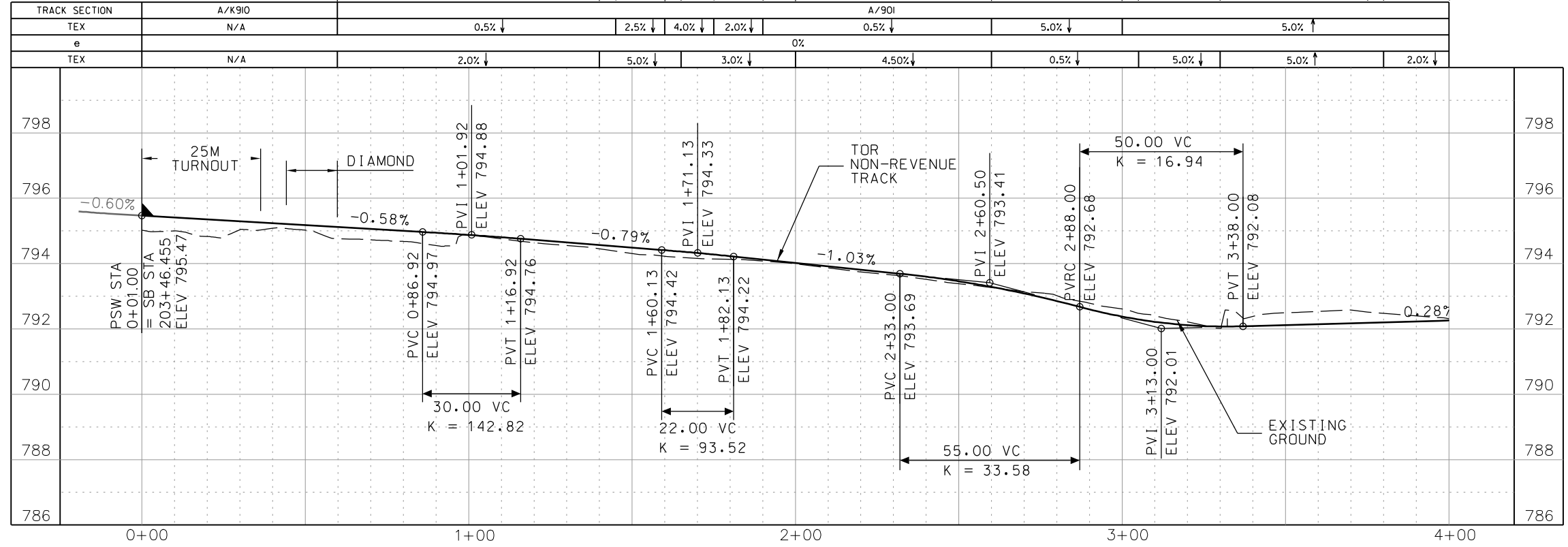
ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
NORTHBOUND TRACK PLAN AND PROFILE STA 147+50 TO STA 150+83	



- CONSTRUCTION NOTES**
- TURNOUT #11369
INSTALL A 25M CONTINUOUSLY CURVED
FROG POWERED EMBEDDED TURNOUT. SEE
SHEET K909.
 - TURNOUT #21346
INSTALL A 25M CONTINUOUSLY CURVED
FROG POWERED EMBEDDED TURNOUT WITH
DIAMOND. SEE SHEET K910.
 - CURB SHALL BE CONSTRUCTED AFTER
THE TRACK SLAB. MAINTAIN A MINIMUM
OFFSET FROM FACE OF CURB TO TRACK
CENTERLINE OF 16.20'.

- GENERAL NOTES**
- SEE DISCIPLINE SPECIFIC
DRAWINGS FOR DETAILED INFORMATION
ON CIVIL, TRAFFIC, SYSTEMS, AND
DRAINAGE STRUCTURES.
 - ALL ELEVATIONS AND DIMENSIONS
GIVEN ARE IN FEET UNLESS OTHERWISE
NOTED.
 - ALL CURVES ARE BASED ON ARC
DEFINITION.
 - PROFILES DESIGNED TO FINAL TOP
OF RAIL ELEVATION.



REV	DATE	DESCRIPTION	DESIGNED BY	HA
			CHECKED BY	JWR
			DRAWN BY	MMO
			CHECKED BY	JWR
			APPROVED BY	NKS

PLOT DATE: 12/23/2022 8:44:20 AM

DATE 12-23-2022

RideKC STREETCAR

JAMES W. RICE - ENGINEER
LICENSE NO. 2012018122

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

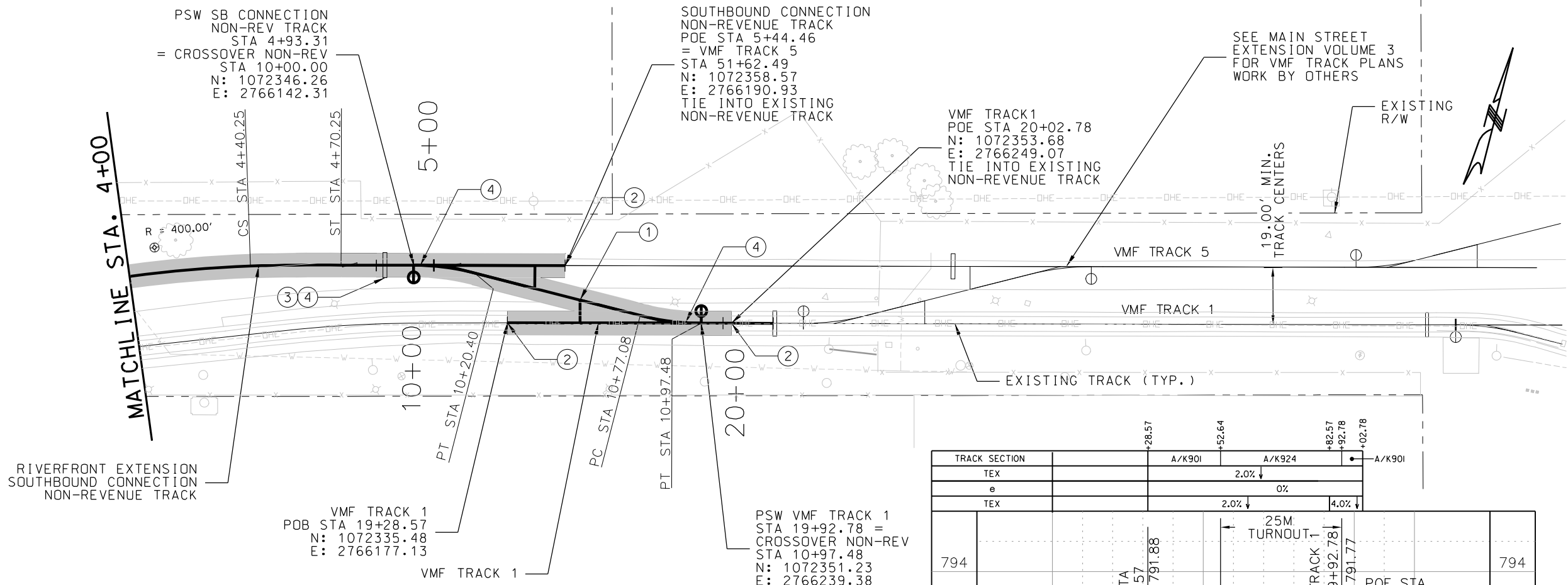
ISSUED FOR BID DATE: 12-23-2022

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SOUTHBOUND CONNECTION NON-REVENUE TRACK
PLAN AND PROFILE
STA 0+00 TO STA 4+00

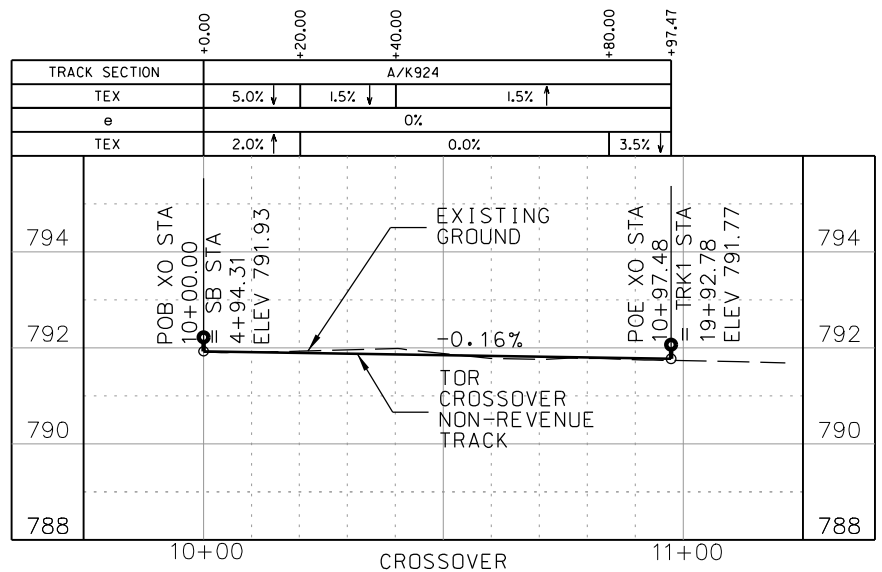
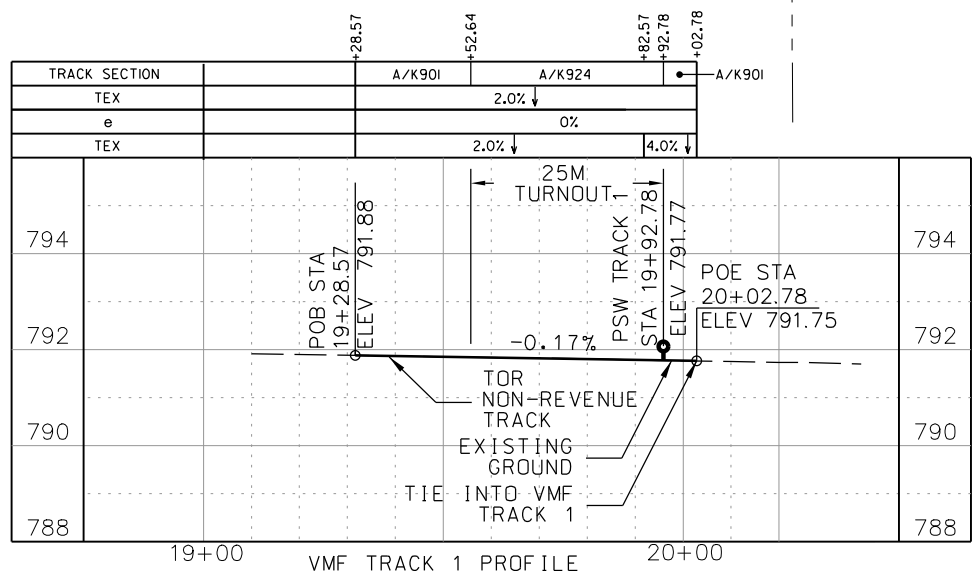
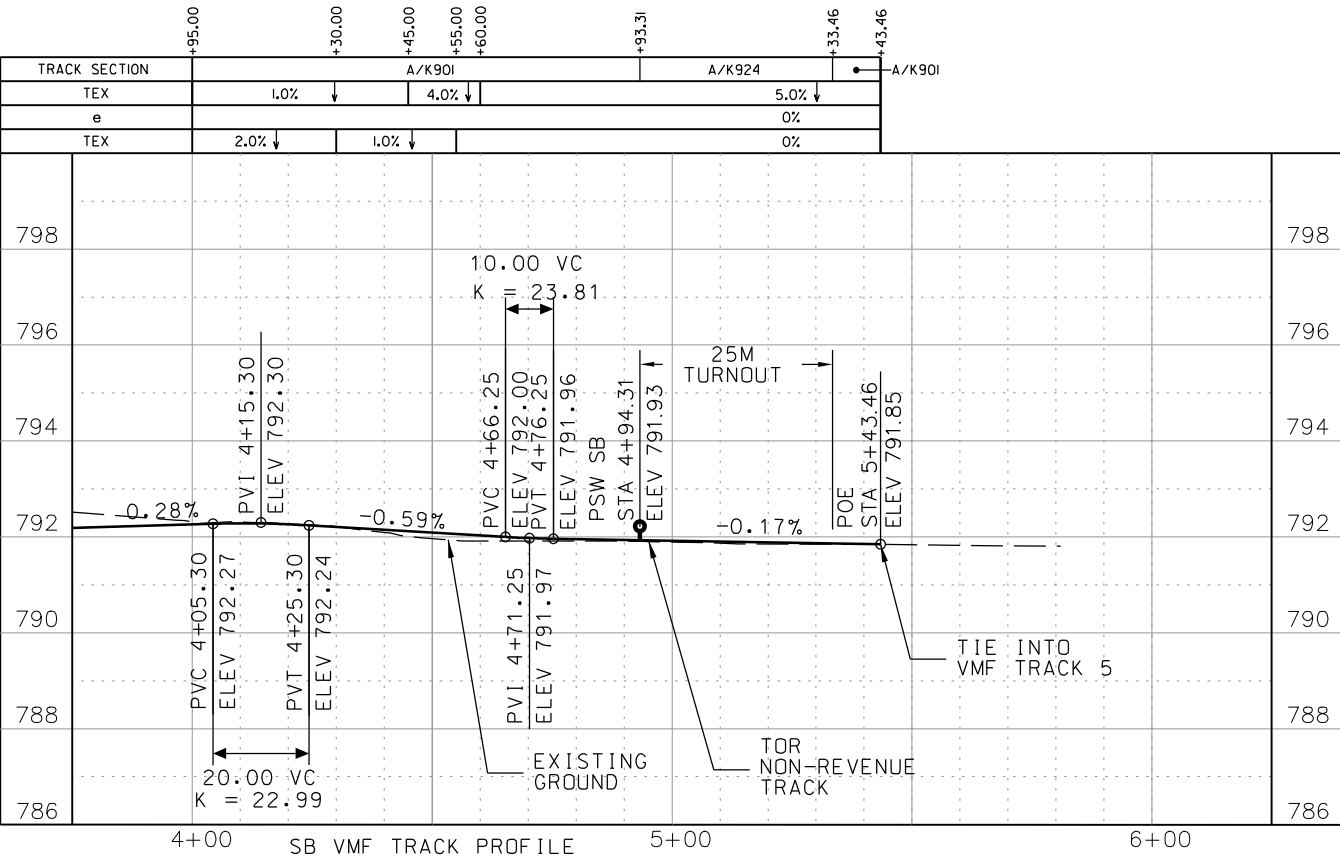
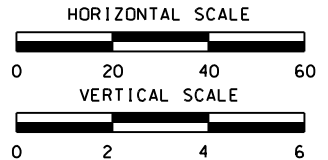
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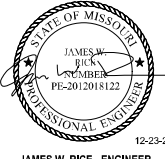
SCALE FOR 22"x34":
H: 1" = 20' V: 1" = 2'
FILENAME:
K112.dgn
CONTRACT NO.:
CONTRACT NO.: ***
VOLUME:
DRAWING NO.: SHEET NO.:
K112 53



- CONSTRUCTION NOTES
1. INSTALL MANUAL NO 4 STRAIGHT FROG EMBEDDED CROSSOVER WITH RIGHT-HAND 25M FLEXIVE TONGUE SWITCHES. SEE SHEET A/K924.
 2. FIELD VERIFY EXISTING WELD LOCATIONS TO DETERMINE EXACT TIE-IN POINTS.
 3. SB CONNECTION NON-REV TRACK STA 4+83.31 INSTALL TRACK DRAIN.
 4. COORDINATE WITH VMF CONTRACTOR FOR TURNOUT DRAIN AND TRACK DRAIN CONNECTIONS.

- GENERAL NOTES
1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
 2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
 3. ALL CURVES ARE BASED ON ARC DEFINITION.
 4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



REV	DATE	DESCRIPTION	DESIGNED BY	HA			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	
			CHECKED BY	JWR				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		NOT FOR CONSTRUCTION	FILENAME: K113.dgn
			DRAWN BY	MMO							CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	JWR							VOLUME:
			APPROVED BY	NKS							DRAWING NO.: SHEET NO.:
PLOT DATE: 12/23/2022			11:55:46 AM		DATE: 12-23-2022		SOUTHBOUND CONNECTION NON-REVNUE TRACK PLAN AND PROFILE STA 4+00 TO END			K113 54	

NORTHBOUND TRACK														SOUTHBOUND TRACK																
Curve No.	Desc	Bearing	Distance	Station	Northing	Easting	Dc(Arc)	Radius	D	L	T	K	P	Streetcar Ea/Eu	Curve No.	Desc	Bearing	Distance	Station	Northing	Easting	Dc(Arc)	Radius	D	L	T	K	P	Streetcar Ea/Eu	
	POB			113+00.00	1072085.51	2765700.48											POB		199+90.00	1071840.27	2765645.39									
CURVE NB - 1 116+00	Tangent	N 10°51'01" E	273.62											Ea=0.00" Eu=4.01" Vd=30 mph	CURVE SB - 1 200+52	Tangent	N 75°38'54" E	10.00										Ea=0.00" Eu=1.53" Vd=5 mph		
	TS			115+73.62	1072354.23	2765751.99										PC			200+00.00	1071842.75	2765655.09			87°18'52"	65.62	76°35'32"	87.72		51.82	
	SPI			115+96.95	1072377.15	2765756.38			1°06'51"	35.00		18.00	0.10			PI			200+65.84	1071859.07	2765718.87									
	SC			116+08.62	1072388.57	2765758.80										CC				1071906.32	2765638.82									
	PI			116+10.22	1072390.18	2765758.88	6°21'58"	900.00	0°12'12"	3.19	1.60					CS			200+87.72	1071907.41	2765704.43									
	CC				1072201.99	2766639.25										SPI			200+97.77	1071917.45	2765704.27			13°05'50"	30.00		15.00		0.60	
	CS			116+11.81	1072391.69	2765759.46										ST			201+17.72	1071936.91	2765699.40									
	SPI			116+23.48	1072403.09	2765761.92			1°06'51"	35.00		18.00	0.10																	
ST			116+46.81	1072425.80	2765767.28																									
CURVE NB - 2 127+67	Tangent	N 13°16'54" E	161.22											Ea=0.88" Eu=2.20" Vd=35 mph	CURVE SB - 2 202+14	Tangent	N 14°02'28" W	0.85											Ea=0.00" Eu=4.10" Vd=15 mph	
	TS			118+08.03	1072582.71	2765804.32										TS			201+18.57	1071937.73	2765699.19									
	SPI			118+68.03	1072641.11	2765818.11			1°36'41"	90.00		45.00	0.20			SPI			201+82.06	1071999.33	2765683.79			12°22'14"	95.00		47.40	1.70		
	SC			118+98.03	1072670.10	2765825.82										SC			202+13.57	1072031.12	2765682.86									
	PI			127+81.76	1073530.39	2766028.03	3°34'52"	1600.00	57°02'13"	1592.8	869.00		PI					202+14.93	1072031.21	2765675.82	26°02'37"	220.00	0°09'00"	0.58	0.29					
	CC				1072258.87	2767372.07							CC						1072037.53	2765902.77										
	CS			134+90.80	1073779.96	2766875.79							CS					202+14.15	1072031.70	2765682.85										
	SPI			135+20.80	1073789.26	2766904.31			1°36'41"	90.00		45.00	0.20			SPI			202+45.96	1072063.49	2765682.00			12°22'14"	95.00		47.40	1.70		
ST			135+80.80	1073806.26	2766961.85								ST			203+09.15	1072125.85	2765693.96												
CURVE NB - 3 136+51	Tangent	N 73°32'30" E	0.20											Ea=0.00" Eu=5.31" Vd=15 mph	CURVE SB - 3 206+28	Tangent	N 10°51'01" E	214.76											Ea=0.00" Eu=1.20" Vd=35 mph	
	TS			135+81.00	1073806.32	2766962.05										TS			205+23.91	1072336.76	2765734.38									
	SPI			136+01.01	1073811.99	2766981.23			5°03'20"	30.00		15.00	0.20			SPI			205+47.24	1072359.68	2765738.77			0°14'40"	35.00		17.50	0.00		
	SC			136+11.00	1073815.66	2766990.54										SC			205+58.91	1072371.13	2765741.02									
	PI			136+40.18	1073823.09	2767018.79	33°42'12"	170.00	18°59'15"	56.34	28.40		PI					206+28.42	1072439.41	2765754.06	1°23'51"	4100.00	1°56'33"	139.00	69.51					
	CC				1073973.82	2766928.20							CC						1071582.16	2769764.39										
	CS			136+67.34	1073844.55	2767038.61							CS					206+97.90	1072507.05	2765770.07										
	SPI			136+77.35	1073851.05	2767046.22			5°03'20"	30.00		15.00	0.20			SPI			207+09.57	1072518.41	2765772.71			0°14'40"	35.00		17.50	0.00		
ST			136+97.34	1073865.33	2767060.23								ST			207+32.90	1072541.12	2765778.07												
CURVE NB - 4 137+93	Tangent	N 44°26'35" E	0.22											Ea=0.00" Eu=5.82" Vd=15 mph	CURVE SB - 4 217+48	Tangent	N 13°16'54" E	46.51											Ea=0.88" Eu=2.17" Vd=35 mph	
	TS			136+97.56	1073865.49	2767060.38										TS			207+79.41	1072586.39	2765788.75									
	SPI			137+17.57	1073879.77	2767074.39			5°32'41"	30.00		15.00	0.20			SPI			208+39.41	1072644.78	2765802.53			1°35'44"	90.00		45.00	0.20		
	SC			137+27.56	1073886.21	2767082.06										SC			208+69.41	1072673.78	2765810.24									
	PI			137+53.97	1073905.76	2767099.88	36°57'54"	155.00	18°47'05"	50.82	25.60		PI					217+62.42	1073543.10	2766014.59	3°32'44"	1616.00	57°04'08"	1610.00	878.70					
	CC				1073767.49	2767181.72							CC						1072258.87	2767372.07										
	CS			137+78.37	1073911.98	2767125.59							CS					224+79.01	1073795.31	2766871.25										
	SPI			137+88.38	1073915.60	2767134.92			5°32'41"	30.00		15.00	0.20			SPI			225+09.01	1073804.61	2766899.78			1°35'44"	90.00		45.00	0.20		
ST			138+08.37	1073921.01	2767154.19								ST			225+69.01	1073821.61	2766957.32												
CURVE NB - 5 144+36	Tangent	N 74°19'02" E	490.99											Ea=0.00" Eu=2.50" Vd=30 mph	CURVE SB - 5 226+23	Tangent	N 73°32'30" E	0.34											Ea=0.00" Eu=5.82" Vd=15 mph	
	TS			142+99.37	1074053.73	2767626.90										TS			225+69.35	1073821.70	2766957.64									
	SPI			143+19.37	1074059.14	2767646.16			0°35'47"	30.00		15.00	0.00			SPI			225+89.36	1073827.37	2766976.83			5°32'41"	30.00		15.00	0.20		
	SC			143+29.37	1074061.94	2767655.76																								

NORTHBOUND CONNECTION NON-REVENUE TRACK

Curve No.	Desc	Bearing	Distance	Station	Northing	Easting	Dc(Arc)	Radius	D	L	T	K	P	Streetcar Ea/Eu
CURVE NB VMF-1 0+53	POB			0+00.00	1072152.70	2765713.36								Ea=0.00" Eu=4.89" Vd=10 mph
	PI			0+52.50	1072204.67	2765723.32	69°51'21"	82.02	54°45'52"	78.40	42.48			
	CC				1072137.18	2765793.90								
	CS			0+77.89	1072211.88	2765760.03								
	SPI			0+87.92	1072216.03	2765769.17			10°28'42"	30.00		15.00	0.50	
	ST			1+07.89	1072220.84	2765788.62								
	Tangent	N 76°05'35" E	34.73											
	PI			1+42.62	1072229.19	2765822.33								

VMF TRACK 1

Curve No.	Desc	Bearing	Distance	Station	Northing	Easting	Dc(Arc)	Radius	D	L	T	K	P	Streetcar Ea/Eu
	POB			19+28.57	1072335.48	2766177.13								
	Tangent	N 75°48'26" E	74.21											
	POE			20+02.78	1072353.68	2766249.07								

CROSSOVER NON-REVENUE TRACK

Curve No.	Desc	Bearing	Distance	Station	Northing	Easting	Dc(Arc)	Radius	D	L	T	K	P	Streetcar Ea/Eu
CURVE XOVER-1 10+10	POS			10+00.00	1072346.28	2766142.31								Ea=0.00" Eu=4.89" Vd=5 mph
	PI			10+10.25	1072348.79	2766152.25	69°51'21"	82.02	14°15'00"	20.40	10.25			
	CC				1072266.76	2766162.42								
	PT			10+20.40	1072348.78	2766162.50								
	Tangent	S 89°56'34" E	56.69											
CURVE XOVER-2 10+87	PC			10+77.08	1072348.72	2766219.19								Ea=0.00" Eu=4.89" Vd=5 mph
	PI			10+87.33	1072348.71	2766229.44	69°51'21"	82.02	14°15'00"	20.40	10.25			
	CC				1072430.74	2766219.27								
	POS			10+97.48	1072351.22	2766239.38								

SOUTHBOUND CONNECTION NON-REVENUE TRACK

Curve No.	Desc	Bearing	Distance	Station	Northing	Easting	Dc(Arc)	Radius	D	L	T	K	P	Streetcar Ea/Eu
CURVE SB VMF-1 10+53	POB			0+01.00	1072162.49	2765700.98								Ea=0.00" Eu=4.89" Vd=10 mph
	PI			0+53.80	1072204.02	2765708.94	69°51'21"	82.02	54°33'01"	78.09	42.29			
	CC				1072147.04	2765781.53								
	CS			0+79.10	1072221.62	2765747.40								
	SPI			0+89.14	1072225.80	2765756.52			10°28'42"	30.00		14.98	0.46	
	ST			1+09.10	1072230.68	2765775.95								
	Tangent	N 75°53'02" E	138.38											
CURVE SB VMF-2 13+02	TS			2+47.48	1072264.43	2765910.15								Ea=0.00" Eu=4.01" Vd=20 mph
	SPI			2+67.48	1072269.31	2765929.54			2°08'55"	30.00		15.00	0.09	
	SC			2+77.48	1072272.11	2765939.14								
	PI			3+03.33	1072279.35	2765963.96	14°19'26"	400.00	7°23'42"	51.63	25.85			
	CC				1072656.10	2765827.11								
	CS			3+29.10	1072289.72	2765987.64								
	SPI			3+39.10	1072293.74	2765996.80			2°08'55"	30.00		15.00	0.09	
	ST			3+59.10	1072302.44	2766014.80								
	Tangent	N 64°11'31" E	0.07											
CURVE SB VMF-3 14+14	TS			3+59.16	1072302.47	2766014.86								Ea=0.00" Eu=4.01" Vd=20 mph
	SPI			3+79.16	1072311.18	2766032.87			2°08'55"	30.00		15.00	0.09	
	SC			3+89.16	1072315.20	2766042.03								
	PI			4+14.74	1072325.46	2766065.46	14°19'05"	400.00	7°19'02"	51.08	25.58			
	CC				1071948.82	2766202.55								
	CS			4+40.25	1072332.66	2766090.00								
	SPI			4+50.25	1072335.47	2766099.60			2°08'55"	30.00		15.00	0.09	
	ST			4+70.25	1072340.38	2766118.99								
	Tangent	N 75°48'26" E	74.21											
	POE			5+44.46	1072358.57	2766190.93								

REV	DATE	DESCRIPTION

DESIGNED BYMMO

CHECKED BYJWR

DRAWN BYMMO

CHECKED BYJWR

APPROVED BYNKS

PLOT DATE: 12/23/2022

8:44:31 AM

DATE12-23-2022





JAMES W. RICE - ENGINEER
LICENSE NO. 2012018122

ISSUED FOR BID

DATE: 12-23-2022



HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

NOT FOR CONSTRUCTION

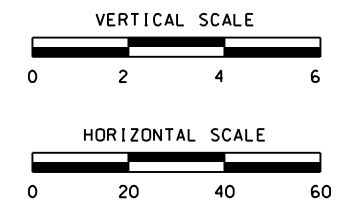
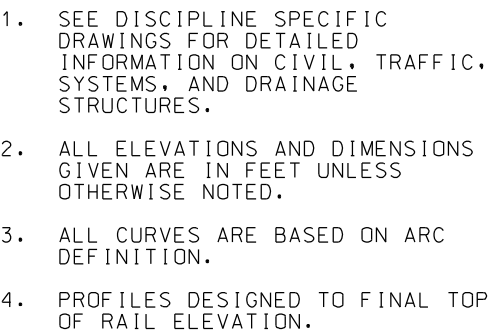
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACK ALIGNMENT TABLES

SCALE FOR 22"x34":
NOT TO SCALE
FILENAME:
K201.dgn
CONTRACT NO.:
CONTRACT NO. ***
VOLUME:
1

DRAWING NO.:K201

SHEET NO.:56



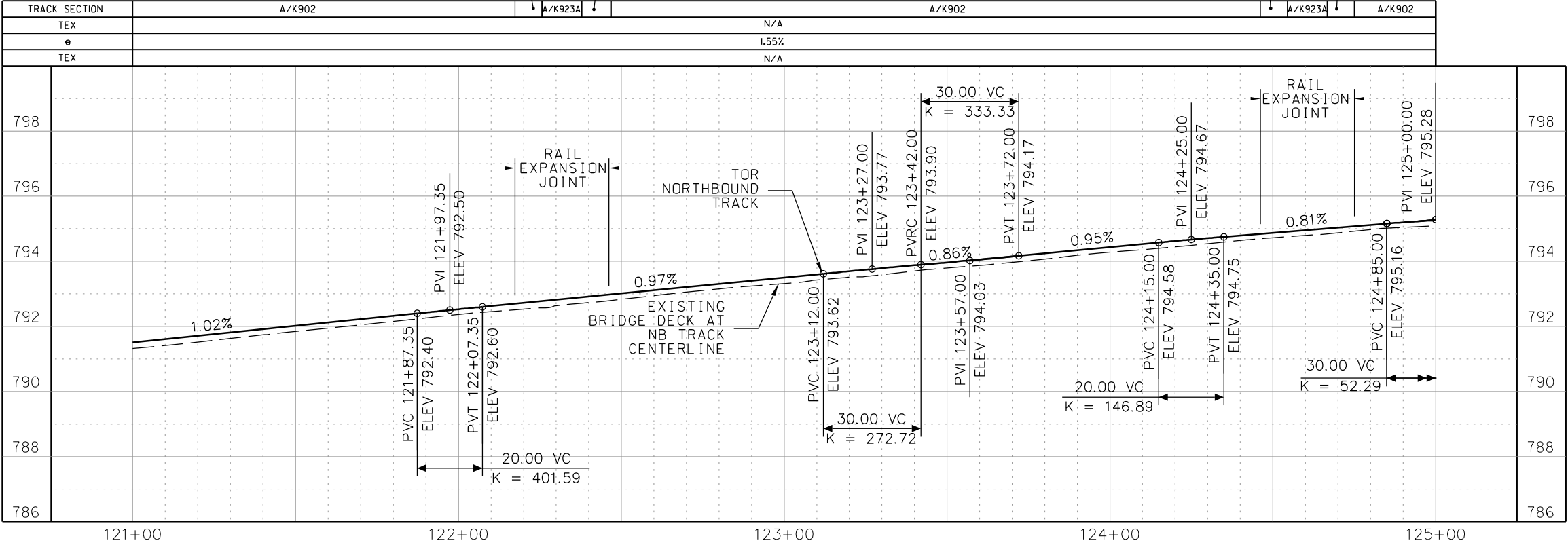
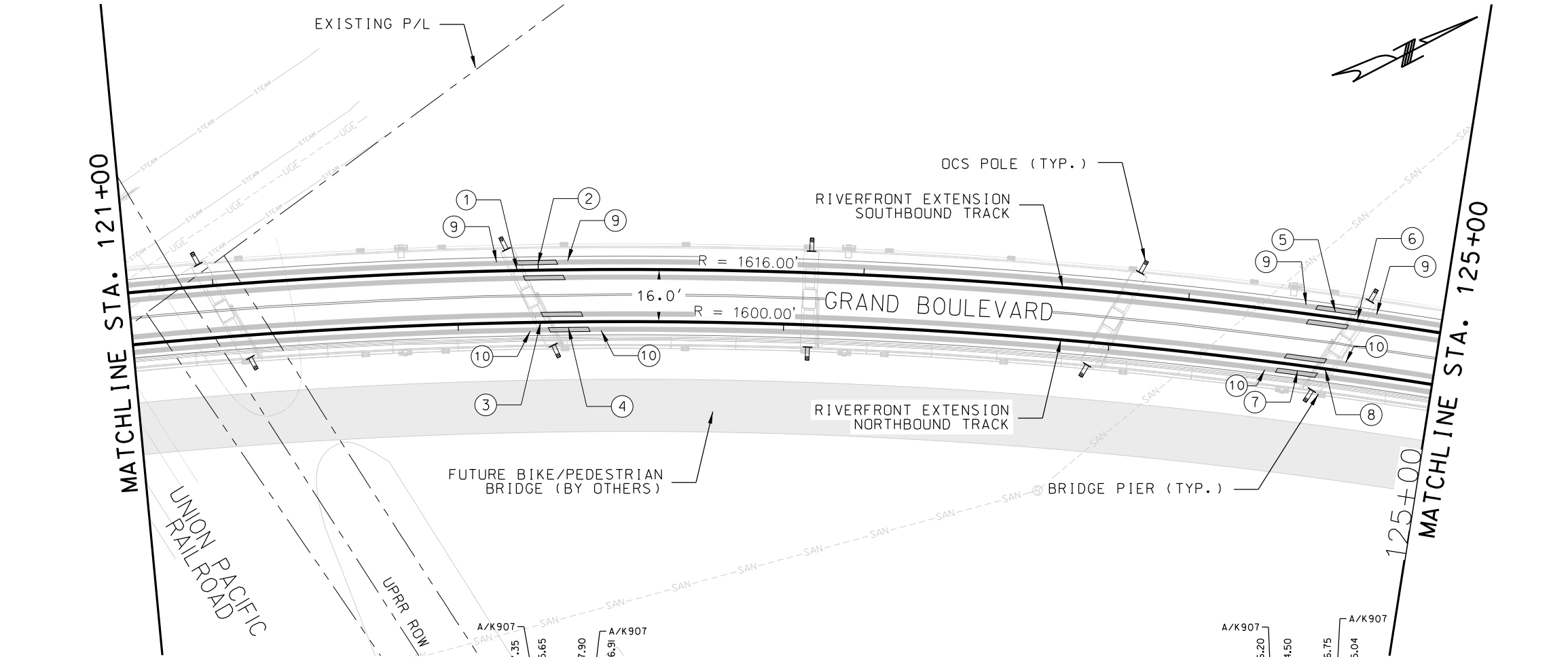
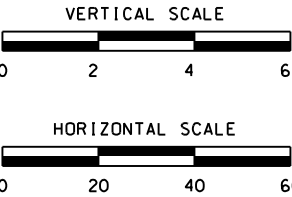
REV	DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION SOUTHBOUND TRACK 115 RE PROFILE STA 207+00 TO STA 211+00	SCALE FOR 22"x34": H ₁ 1" = 20' V ₁ 1" = 2'
			CHECKED BY	JWR				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		FILENAME:
			DRAWN BY	MMO						CONTRACT NO.:
			CHECKED BY	JWR						CONTRACT NO. ***
			APPROVED BY	NKS						VOLUME:
PLOT DATE: 12/23/2022		8:44:39 AM	DATE	12-23-2022				DRAWING NO.:	SHEET NO.:	
								K303A	58	

CONSTRUCTION NOTES

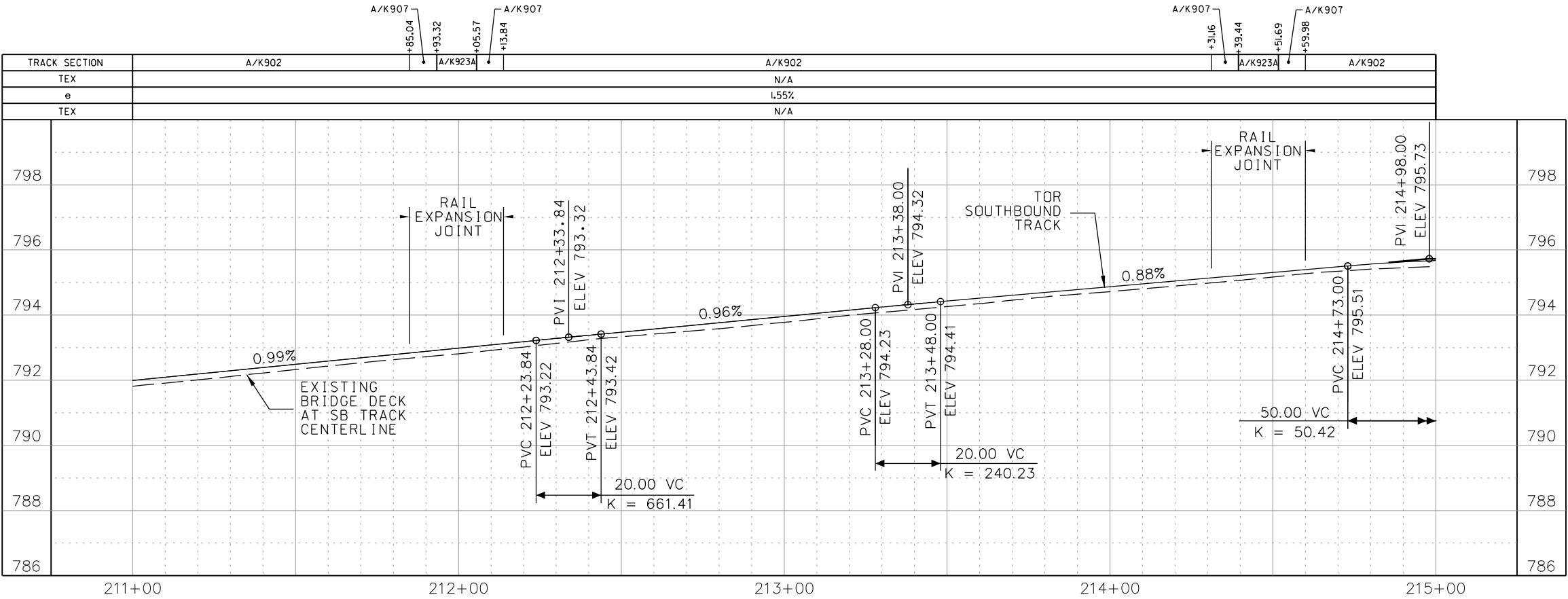
- ① BRIDGE EXPANSION JOINT
SB STA 211+94
- ② RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA 212+00
REPLACE BRIDGE DECK FULL DEPTH
STA 211+79 TO STA 212+23
- ③ BRIDGE EXPANSION JOINT
NB STA 122+26
- ④ RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA 122+34
REPLACE BRIDGE DECK FULL DEPTH
STA 122+09 TO STA 122+52
- ⑤ RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA 214+45
REPLACE BRIDGE DECK FULL DEPTH
STA 214+22 TO STA 214+66
- ⑥ BRIDGE EXPANSION JOINT
SB STA 214+52
- ⑦ RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA 124+59
REPLACE BRIDGE DECK FULL DEPTH
STA 124+41 TO STA 124+84
- ⑧ BRIDGE EXPANSION JOINT
NB STA 124+67
- ⑨ NB STA 122+22.99, NB STA 122+41.62, NB STA 124+49.35 AND NB STA 124+69.61
INSTALL TRANSITION RAIL
SEE SHEET K907 FOR DETAILS
- ⑩ SB STA 211+89.34, SB STA 212+09.28, SB STA 214+35.44 AND SB STA 214+54.80
INSTALL TRANSITION RAIL
SEE SHEET K907 FOR DETAILS

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

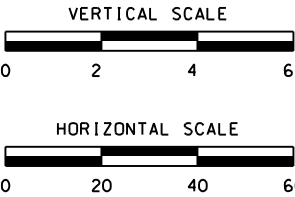


REV	DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	
			CHECKED BY	JWR				HDR Engineering, Inc.		FILENAME: K304.dgn	
			DRAWN BY	MMO			10450 Holmes Road	Suite 600		CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY	JWR			10450 Holmes Road	Suite 600		VOLUME:	
			APPROVED BY	NKS			10450 Holmes Road	Suite 600		DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022 8:44:45 AM			DATE: 12-23-2022		JAMES W. RICE - ENGINEER LICENSE NO. 2012018122		NOT FOR CONSTRUCTION		NORTHBOUND TRACK 115 RE PLAN AND PROFILE STA 121+00 TO STA 125+00		K304 59



GENERAL NOTES

- 1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
- 2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
- 3. ALL CURVES ARE BASED ON ARC DEFINITION.
- 4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



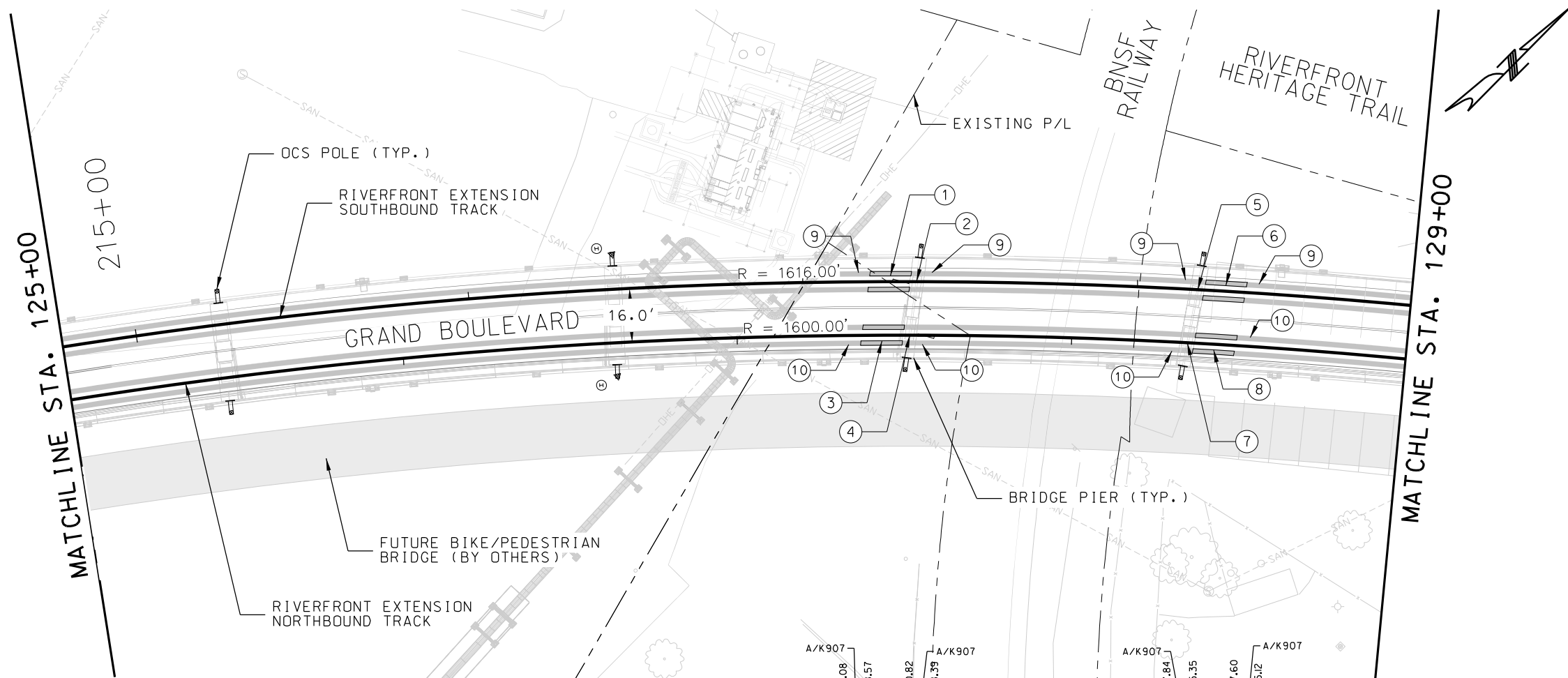
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			CHECKED BY JWR				HDR Engineering, Inc.		SOUTHBOUND TRACK 115 RE		FILENAME: K304A.dgn	
			DRAWN BY MMO				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		PROFILE		CONTRACT NO.: ***	
			CHECKED BY JWR				NOT FOR CONSTRUCTION		STA 211+00 TO STA 215+00		CONTRACT NO. ***	
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PLOT DATE: 12/23/2022

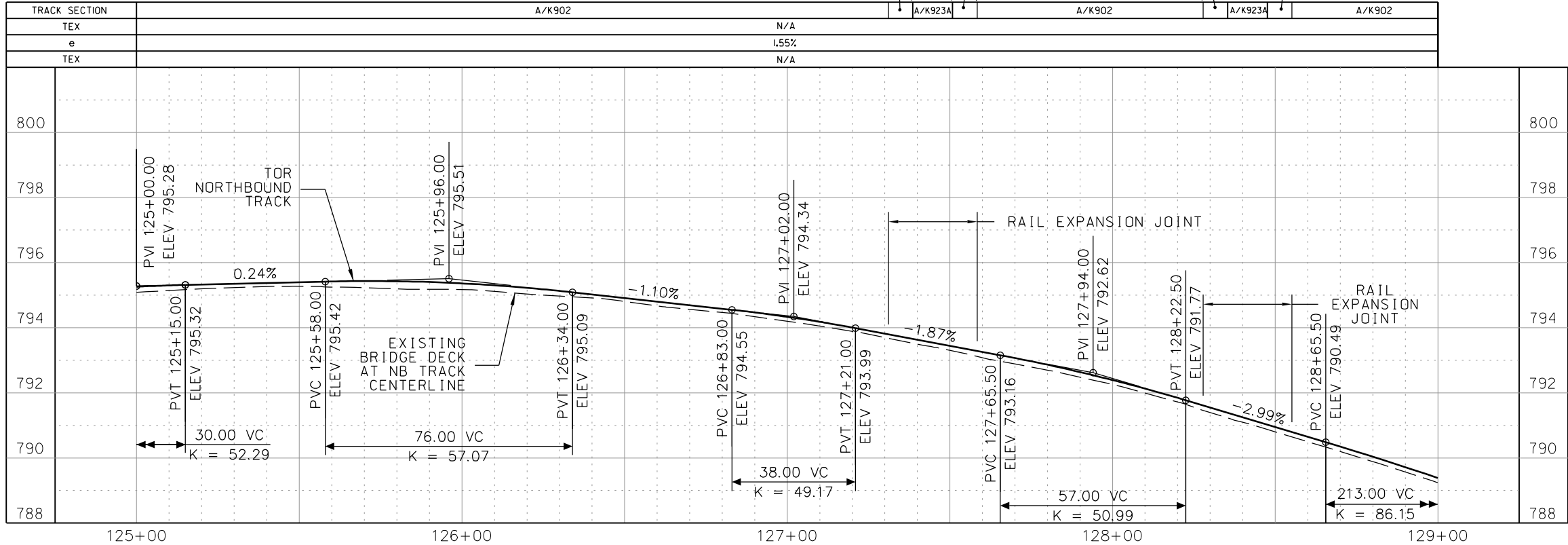
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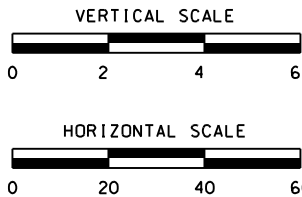
12-23-2022



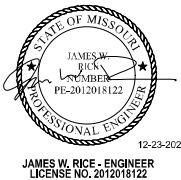
- CONSTRUCTION NOTES
- RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA 217+26
REPLACE BRIDGE DECK FULL DEPTH STA 217+07 TO STA 217+44
 - BRIDGE EXPANSION JOINT
SB STA 217+34
 - RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA 127+43
REPLACE BRIDGE DECK FULL DEPTH STA 127+27 TO STA 127+63
 - BRIDGE EXPANSION JOINT
NB STA 127+52
 - BRIDGE EXPANSION JOINT
SB STA 218+18
 - RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA 218+26
REPLACE BRIDGE DECK FULL DEPTH STA 218+06 TO STA 218+43
 - BRIDGE EXPANSION JOINT
NB STA 128+35
 - RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA 128+43
REPLACE BRIDGE DECK FULL DEPTH STA 128+25 TO STA 128+61
 - NB STA 127+34.63, NB STA 127+54.18, NB STA 128+31.48 AND NB STA 128+51.81
INSTALL TRANSITION RAIL
SEE SHEET K907 FOR DETAILS
 - SB STA 217+34.63, SB STA 217+36.54, SB STA 218+15.14 AND SB STA 218+34.50
INSTALL TRANSITION RAIL
SEE SHEET K907 FOR DETAILS



- GENERAL NOTES
- SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
 - ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
 - ALL CURVES ARE BASED ON ARC DEFINITION.
 - PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

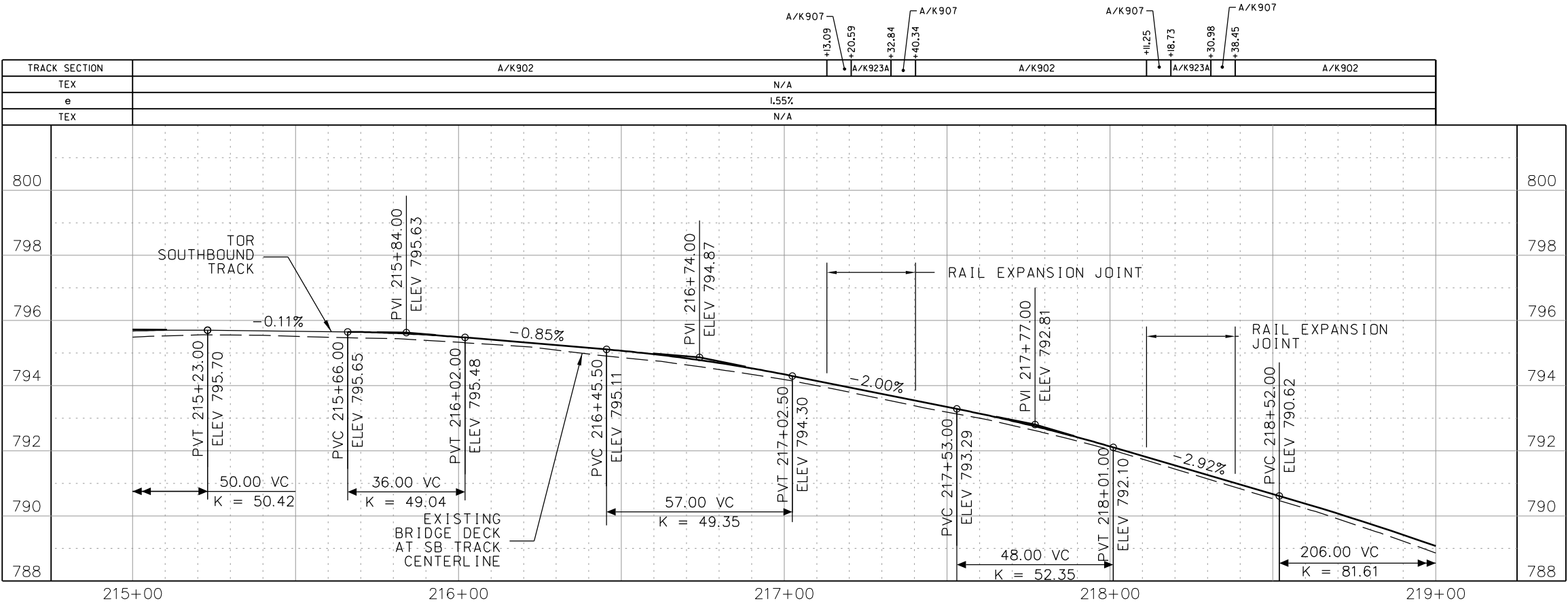


REV	DATE	DESCRIPTION	DESIGNED BY	CRR	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20'; V: 1" = 2'
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			DRAWN BY	MMO	10450 Holmes Road			CONTRACT NO.:
					Suite 600			CONTRACT NO. ***
			CHECKED BY	JWR	Kansas City, MO 64131-3471			VOLUME:
			APPROVED BY	NKS	816-360-2700			DRAWING NO.:
					Certificate of Authority: 000856			SHEET NO.:
								61
PLOT DATE: 12/23/2022			8:44:54 AM		DATE: 12-23-2022			



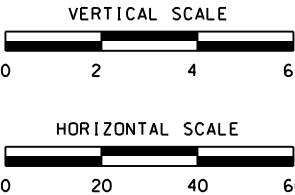
ISSUED FOR BID	DATE: 12-23-2022
HDR	
HDR Engineering, Inc.	
10450 Holmes Road	
Suite 600	
Kansas City, MO 64131-3471	
816-360-2700	
Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

NORTHBOUND TRACK 115 RE
PLAN AND PROFILE
STA 125+00 TO STA 129+00



GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.



REV	DATE	DESCRIPTION	DESIGNED BY	CRR	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H:V = 20': 1" V: 1" = 2'
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					Suite 600			CONTRACT NO. ***
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			APPROVED BY	NKS	816-360-2700			DRAWING NO.:
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			12-23-2022					

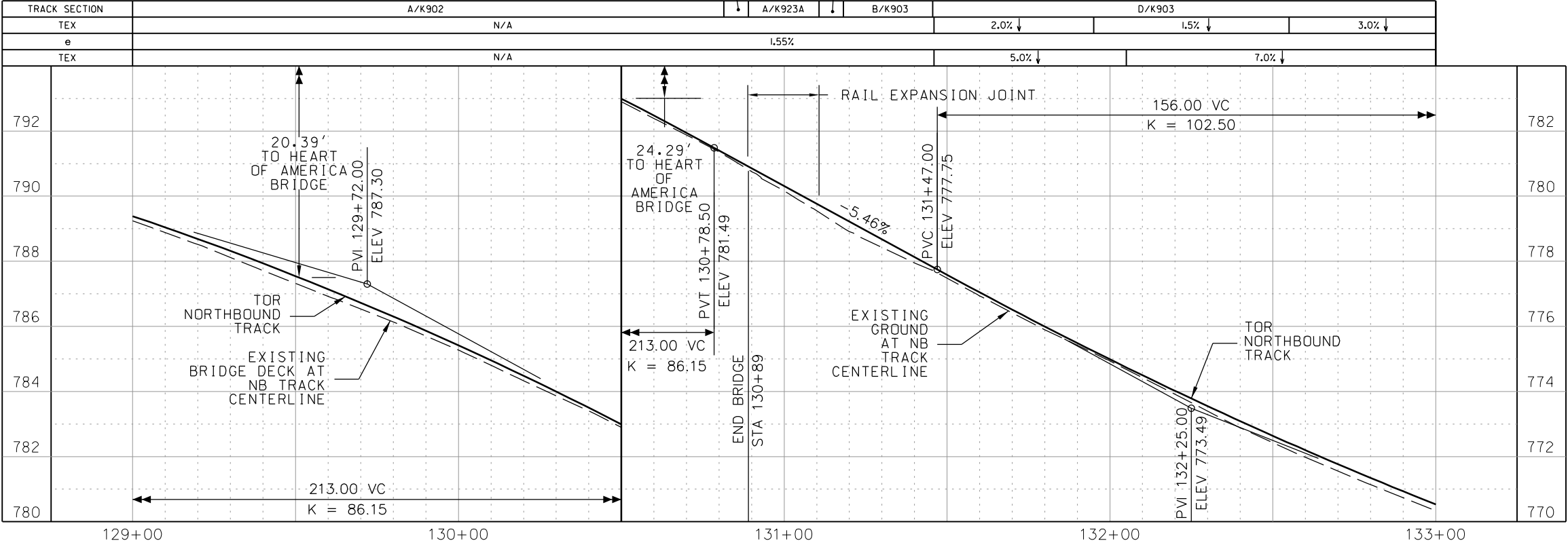
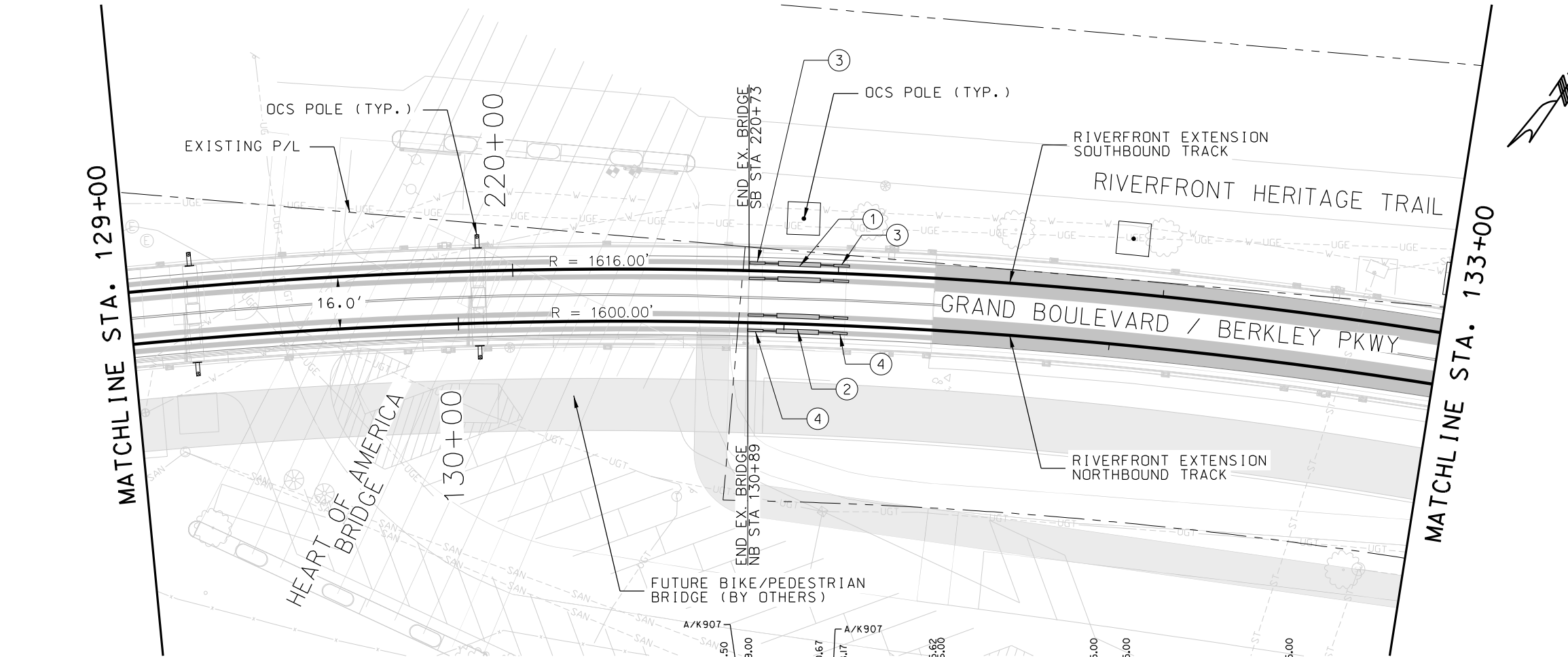
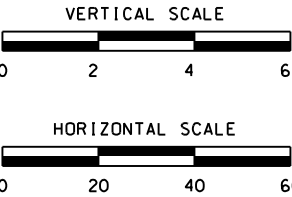


CONSTRUCTION NOTES

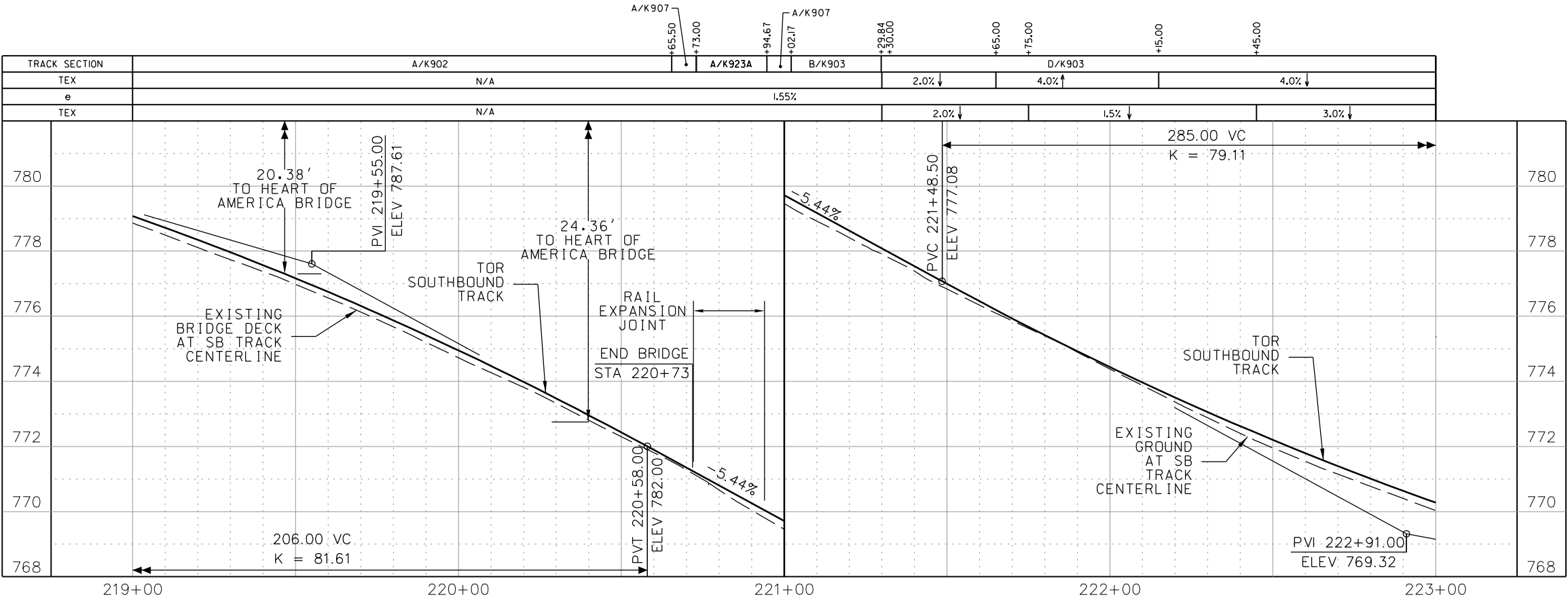
- ① RAIL EXPANSION JOINT ASSEMBLY
SB RUNNING STA. 220+88
REPLACE APPROACH SLAB FULL DEPTH
STA 220+73 TO STA 221+30
- ② RAIL EXPANSION JOINT ASSEMBLY
NB RUNNING STA. 131+04
REPLACE APPROACH SLAB FULL DEPTH
STA 130+89 TO STA 131+47
- ③ NB STA 130+85.93 AND NB
STA 131+14.85
INSTALL TRANSITION RAIL
SEE SHEET K907 FOR DETAILS
- ④ SB STA 220+69.93 AND SB
STA 220+98.85
INSTALL TRANSITION RAIL
SEE SHEET K907 FOR DETAILS

GENERAL NOTES

1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
3. ALL CURVES ARE BASED ON ARC DEFINITION.
4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

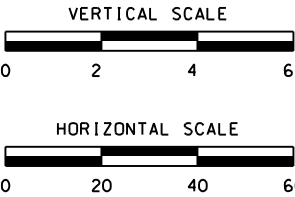


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			CHECKED BY	JWR			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		FILENAME: K306.dgn
			DRAWN BY	MMO						CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	JWR						VOLUME:
			APPROVED BY	NKS						DRAWING NO.: SHEET NO.:
PLOT DATE: 12/23/2022			8:45:02 AM		DATE: 12-23-2022		NORTHBOUND TRACK 115 RE PLAN AND PROFILE STA 129+00 TO STA 133+00			DRAWING NO.: SHEET NO.:

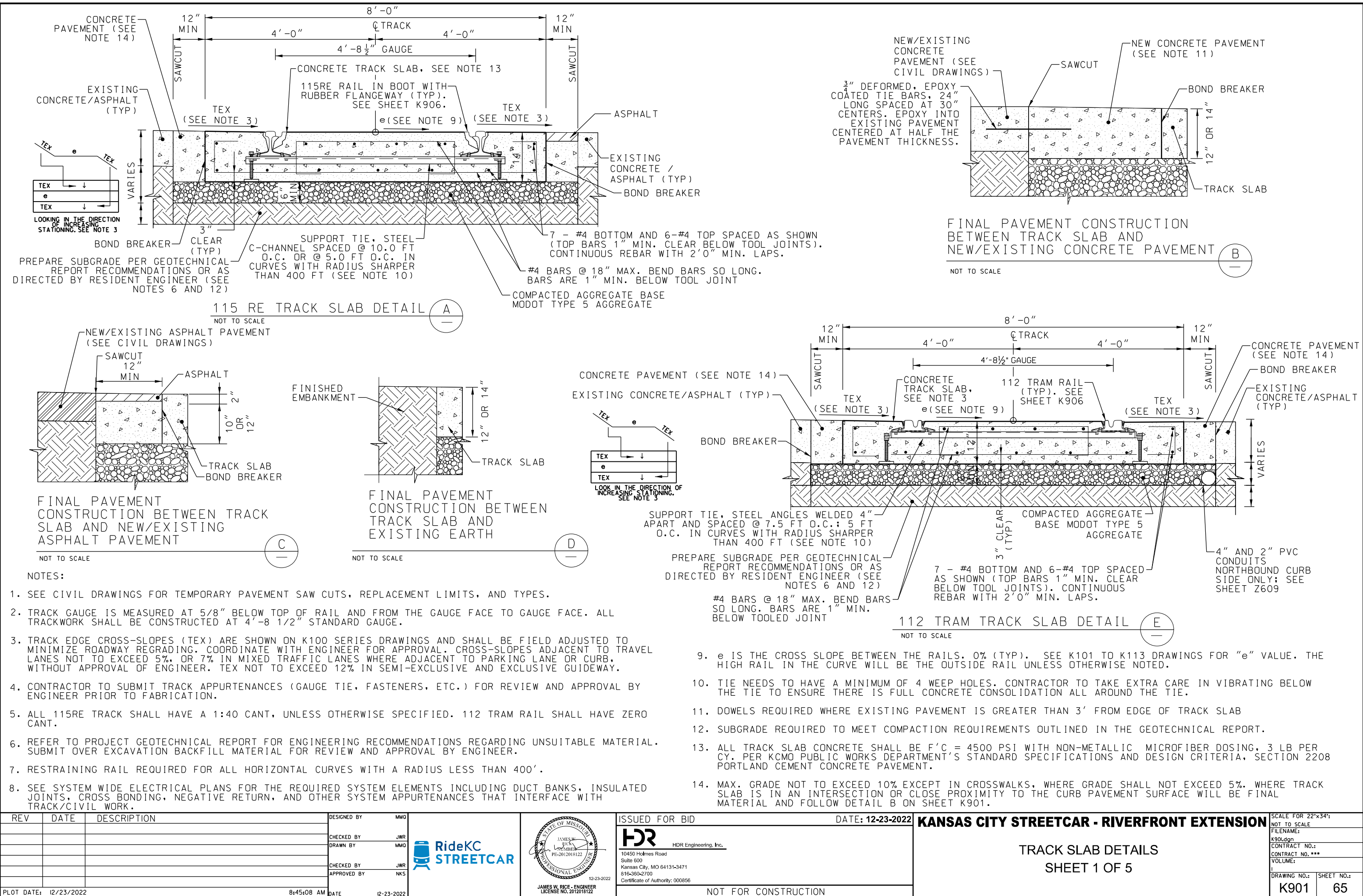


GENERAL NOTES

- 1. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, SYSTEMS, AND DRAINAGE STRUCTURES.
- 2. ALL ELEVATIONS AND DIMENSIONS GIVEN ARE IN FEET UNLESS OTHERWISE NOTED.
- 3. ALL CURVES ARE BASED ON ARC DEFINITION.
- 4. PROFILES DESIGNED TO FINAL TOP OF RAIL ELEVATION.

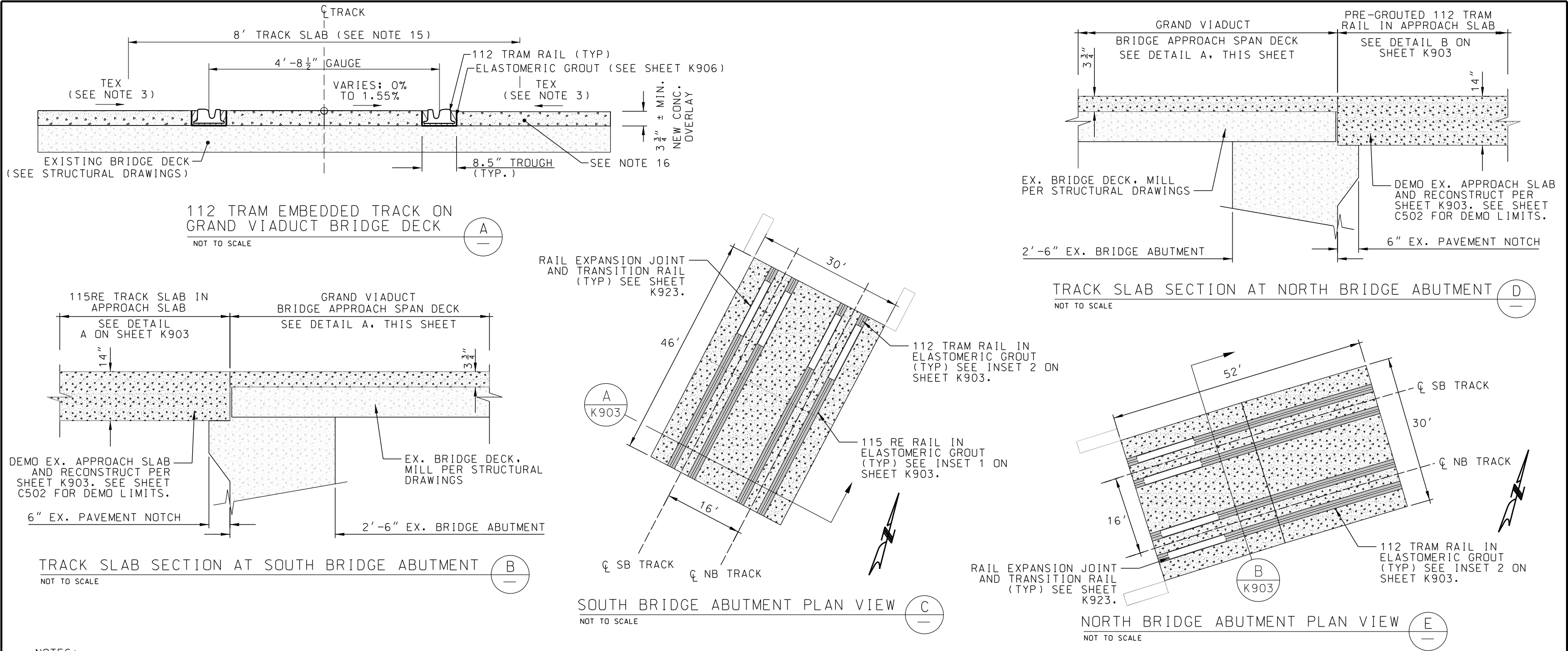


REV DATE DESCRIPTION			DESIGNED BY CRR				ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": H: 1" = 20' V: 1" = 2'	
			CHECKED BY JWR						SOUTHBOUND TRACK 115 RE		FILENAME: K306A.dgn	
			DRAWN BY MMO				10450 Holmes Road		PROFILE		CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY JWR				Suite 600		STA 219+00 TO STA 223+00		VOLUME:	
			APPROVED BY NKS				Kansas City, MO 64131-3471				DRAWING NO.: SHEET NO.:	
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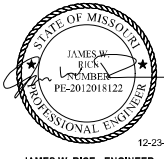
- NOTES:
- SEE CIVIL DRAWINGS FOR TEMPORARY PAVEMENT SAW CUTS, REPLACEMENT LIMITS, AND TYPES.
 - TRACK GAUGE IS MEASURED AT 5/8" BELOW TOP OF RAIL AND FROM THE GAUGE FACE TO GAUGE FACE. ALL TRACKWORK SHALL BE CONSTRUCTED AT 4'-8 1/2" STANDARD GAUGE.
 - TRACK EDGE CROSS-SLOPES (TEX) ARE SHOWN ON K100 SERIES DRAWINGS AND SHALL BE FIELD ADJUSTED TO MINIMIZE ROADWAY REGRADING. COORDINATE WITH ENGINEER FOR APPROVAL. CROSS-SLOPES ADJACENT TO TRAVEL LANES NOT TO EXCEED 5%, OR 7% IN MIXED TRAFFIC LANES WHERE ADJACENT TO PARKING LANE OR CURB, WITHOUT APPROVAL OF ENGINEER. TEX NOT TO EXCEED 12% IN SEMI-EXCLUSIVE AND EXCLUSIVE GUIDEWAY.
 - CONTRACTOR TO SUBMIT TRACK APPURTENANCES (GAUGE TIE, FASTENERS, ETC.) FOR REVIEW AND APPROVAL BY ENGINEER PRIOR TO FABRICATION.
 - ALL 115RE TRACK SHALL HAVE A 1:40 CANT, UNLESS OTHERWISE SPECIFIED. 112 TRAM RAIL SHALL HAVE ZERO CANT.
 - REFER TO PROJECT GEOTECHNICAL REPORT FOR ENGINEERING RECOMMENDATIONS REGARDING UNSUITABLE MATERIAL. SUBMIT OVER EXCAVATION BACKFILL MATERIAL FOR REVIEW AND APPROVAL BY ENGINEER.
 - RESTRAINING RAIL REQUIRED FOR ALL HORIZONTAL CURVES WITH A RADIUS LESS THAN 400'.
 - SEE SYSTEM WIDE ELECTRICAL PLANS FOR THE REQUIRED SYSTEM ELEMENTS INCLUDING DUCT BANKS, INSULATED JOINTS, CROSS BONDING, NEGATIVE RETURN, AND OTHER SYSTEM APPURTENANCES THAT INTERFACE WITH TRACK/CIVIL WORK.
 - e IS THE CROSS SLOPE BETWEEN THE RAILS. 0% (TYP). SEE K101 TO K113 DRAWINGS FOR "e" VALUE. THE HIGH RAIL IN THE CURVE WILL BE THE OUTSIDE RAIL UNLESS OTHERWISE NOTED.
 - TIE NEEDS TO HAVE A MINIMUM OF 4 WEEP HOLES. CONTRACTOR TO TAKE EXTRA CARE IN VIBRATING BELOW THE TIE TO ENSURE THERE IS FULL CONCRETE CONSOLIDATION ALL AROUND THE TIE.
 - DOWELS REQUIRED WHERE EXISTING PAVEMENT IS GREATER THAN 3' FROM EDGE OF TRACK SLAB
 - SUBGRADE REQUIRED TO MEET COMPACTION REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.
 - ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY. PER KCMO PUBLIC WORKS DEPARTMENT'S STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT.
 - MAX. GRADE NOT TO EXCEED 10% EXCEPT IN CROSSWALKS, WHERE GRADE SHALL NOT EXCEED 5%. WHERE TRACK SLAB IS IN AN INTERSECTION OR CLOSE PROXIMITY TO THE CURB PAVEMENT SURFACE WILL BE FINAL MATERIAL AND FOLLOW DETAIL B ON SHEET K901.

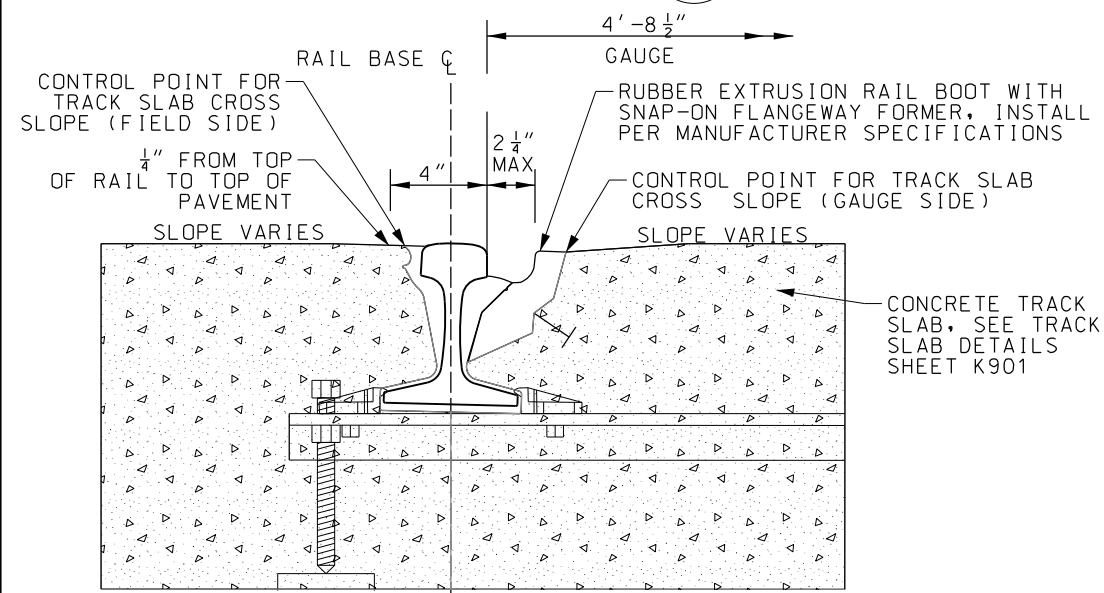
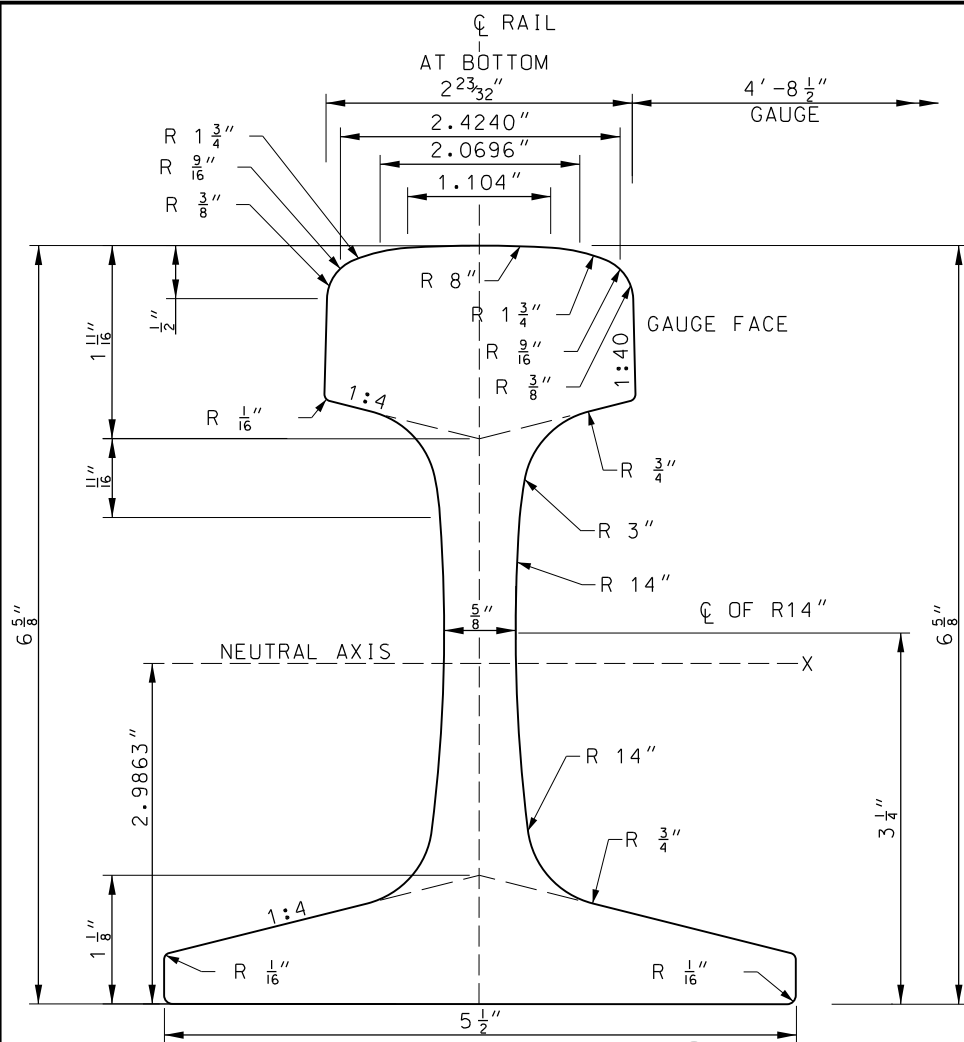
REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JWR				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		TRACK SLAB DETAILS SHEET 1 OF 5	FILENAME: K901.dgn
			DRAWN BY	MMO							CONTRACT NO.:
			CHECKED BY	JWR							CONTRACT NO. ***
			APPROVED BY	NKS							VOLUME:
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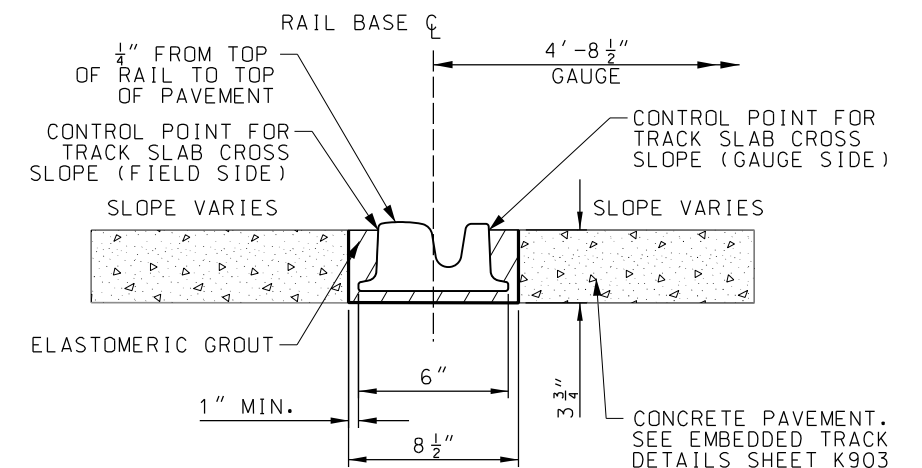
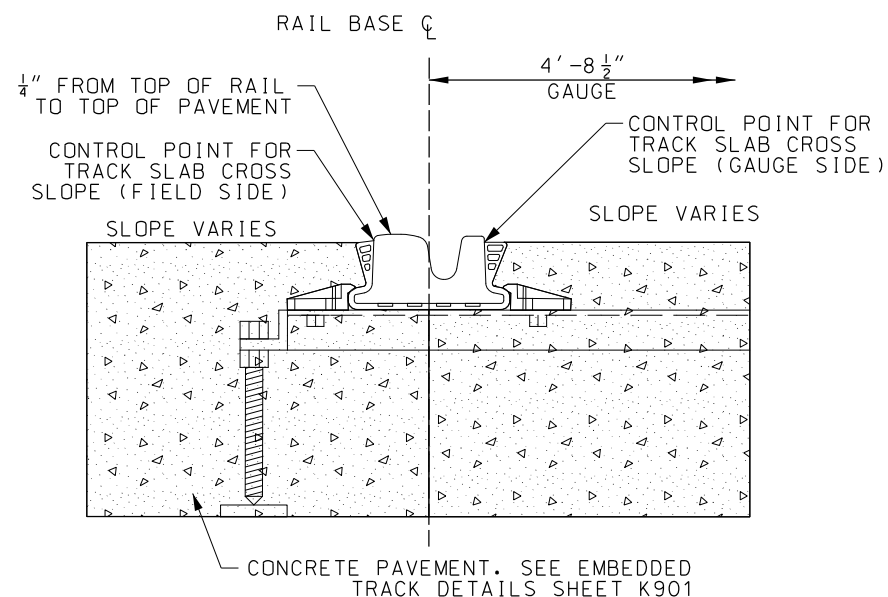
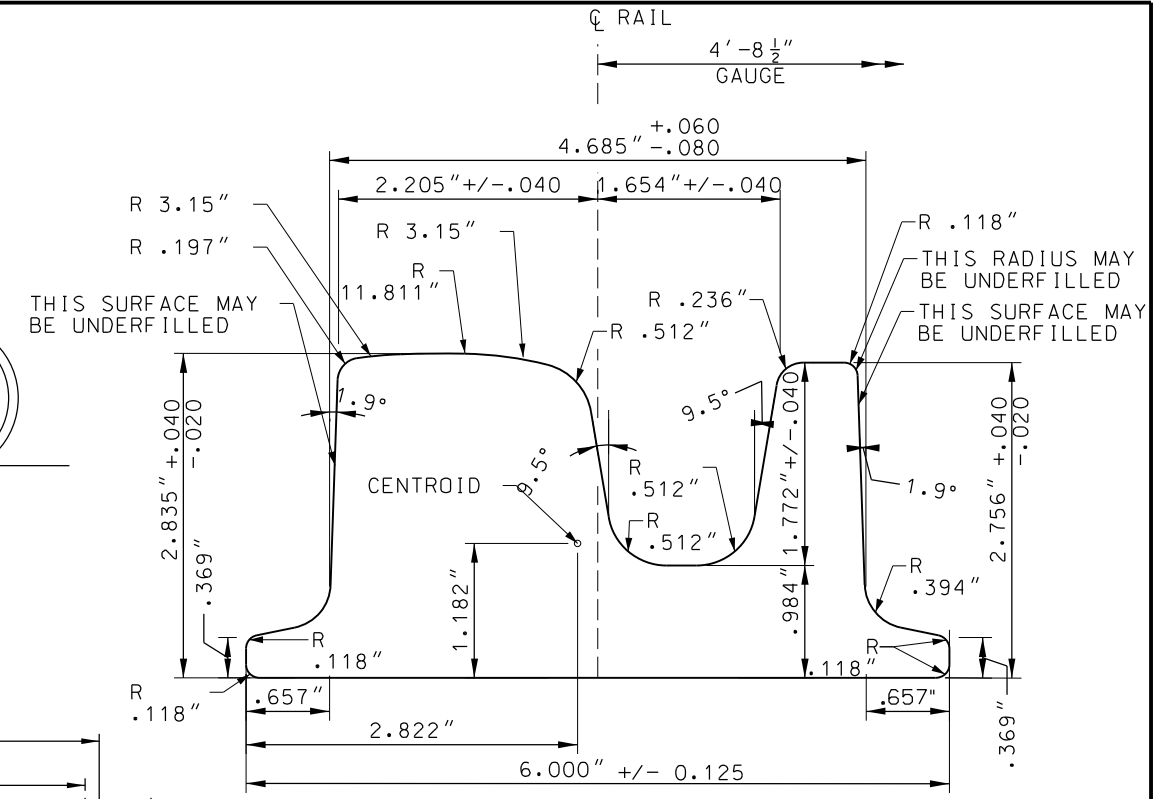
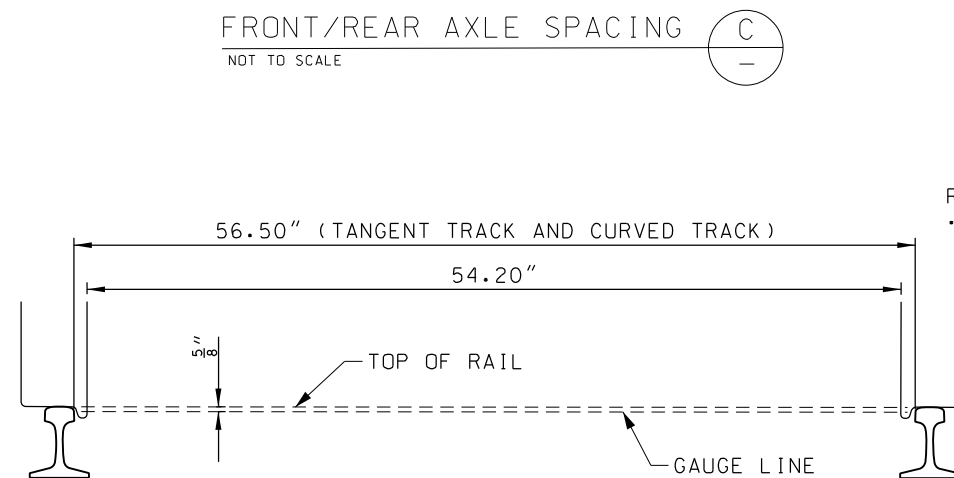
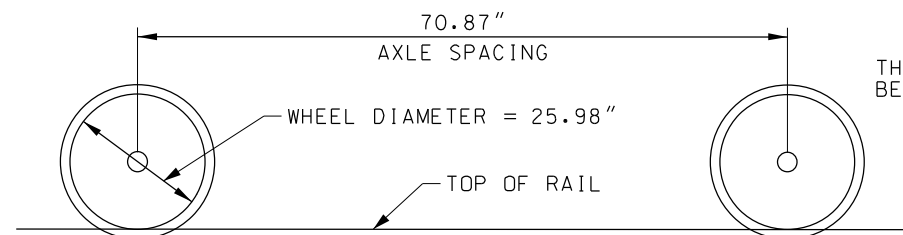
1. SEE CIVIL DRAWINGS FOR TEMPORARY PAVEMENT SAW CUTS, REPLACEMENT LIMITS, AND TYPES.
2. TRACK GAUGE IS MEASURED AT 5/8" BELOW TOP OF RAIL AND FROM THE GAUGE FACE TO GAUGE FACE. ALL TRACKWORK SHALL BE CONSTRUCTED AT 4'-8 1/2" STANDARD GAUGE.
3. TRACK EDGE CROSS-SLOPES (TEX) ARE SHOWN ON K100 SERIES DRAWINGS AND SHALL BE FIELD ADJUSTED TO MINIMIZE ROADWAY REGRADING. COORDINATE WITH ENGINEER FOR APPROVAL. CROSS-SLOPES ADJACENT TO TRAVEL LANES NOT TO EXCEED 5%, OR 7% IN MIXED TRAFFIC LANES WHERE ADJACENT TO PARKING LANE OR CURB, WITHOUT APPROVAL OF ENGINEER. TEX NOT TO EXCEED 12% IN SEMI-EXCLUSIVE AND EXCLUSIVE GUIDEWAY.
4. CONTRACTOR TO SUBMIT TRACK APPURTENANCES (GAUGE TIE, FASTENERS, ETC.) FOR REVIEW AND APPROVAL BY ENGINEER PRIOR TO FABRICATION.
5. ALL 115RE TRACK SHALL HAVE A 1:40 CANT, UNLESS OTHERWISE SPECIFIED. 112 TRAM RAIL SHALL HAVE ZERO CANT.
6. REFER TO PROJECT GEOTECHNICAL REPORT FOR ENGINEERING RECOMMENDATIONS REGARDING UNSUITABLE MATERIAL. SUBMIT OVER EXCAVATION BACKFILL MATERIAL FOR REVIEW AND APPROVAL BY ENGINEER.
7. RESTRAINING RAIL REQUIRED FOR ALL HORIZONTAL CURVES WITH A RADIUS LESS THAN 400'.
8. SEE SYSTEM WIDE ELECTRICAL PLANS FOR THE REQUIRED SYSTEM ELEMENTS INCLUDING DUCT BANKS, INSULATED JOINTS, CROSS BONDING, NEGATIVE RETURN, AND OTHER SYSTEM APPURTENANCES THAT INTERFACE WITH TRACK/CIVIL WORK.
9. e IS THE CROSS SLOPE BETWEEN THE RAILS. 0% (TYP). SEE K101 TO K113 DRAWINGS FOR "e" VALUE. THE HIGH RAIL IN THE CURVE WILL BE THE OUTSIDE RAIL UNLESS OTHERWISE NOTED.
10. TIE NEEDS TO HAVE A MINIMUM OF 4 WEEP HOLES. CONTRACTOR TO TAKE EXTRA CARE IN VIBRATING BELOW THE TIE TO ENSURE THERE IS FULL CONCRETE CONSOLIDATION ALL AROUND THE TIE.
11. DOWELS REQUIRED WHERE EXISTING PAVEMENT IS GREATER THAN 3' FROM EDGE OF TRACK SLAB
12. SUBGRADE REQUIRED TO MEET COMPACTION REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.
13. ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY. PER KCMO PUBLIC WORKS DEPARTMENT'S STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT.
14. CONTRACTOR TO SUBMIT INSTALLATION PLAN FOR HOLDING GAUGE IN ELASTOMERIC GROUT TROUGH TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
15. TRACK SLAB LIMITS ON STRUCTURE SHOWN FOR PAY LIMITS. CONTRACTOR MAY POUR BRIDGE PAVEMENT MONOLITHICALLY WITH TRACK SLAB.
16. SEE SHEETS ST100 TO ST109 FOR GRAND BOULEVARD VIADUCT BRIDGE DETAILS.

REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: K902.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: K902 66
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			DRAWN BY	MMO			10450 Holmes Road			
			CHECKED BY	JWR			Suite 600			
			APPROVED BY	NKS			Kansas City, MO 64131-3471			
PLOT DATE: 12/23/2022			DATE	12-23-2022			816-360-2700	Certificate of Authority: 000856		



NOTES:

1. SEE SHEET K917 FOR RESTRAINING RAIL DETAILS.
2. ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY.

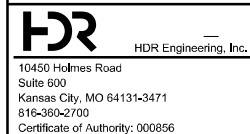


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			CHECKED BY	JWR
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DATE: 12-23-2022

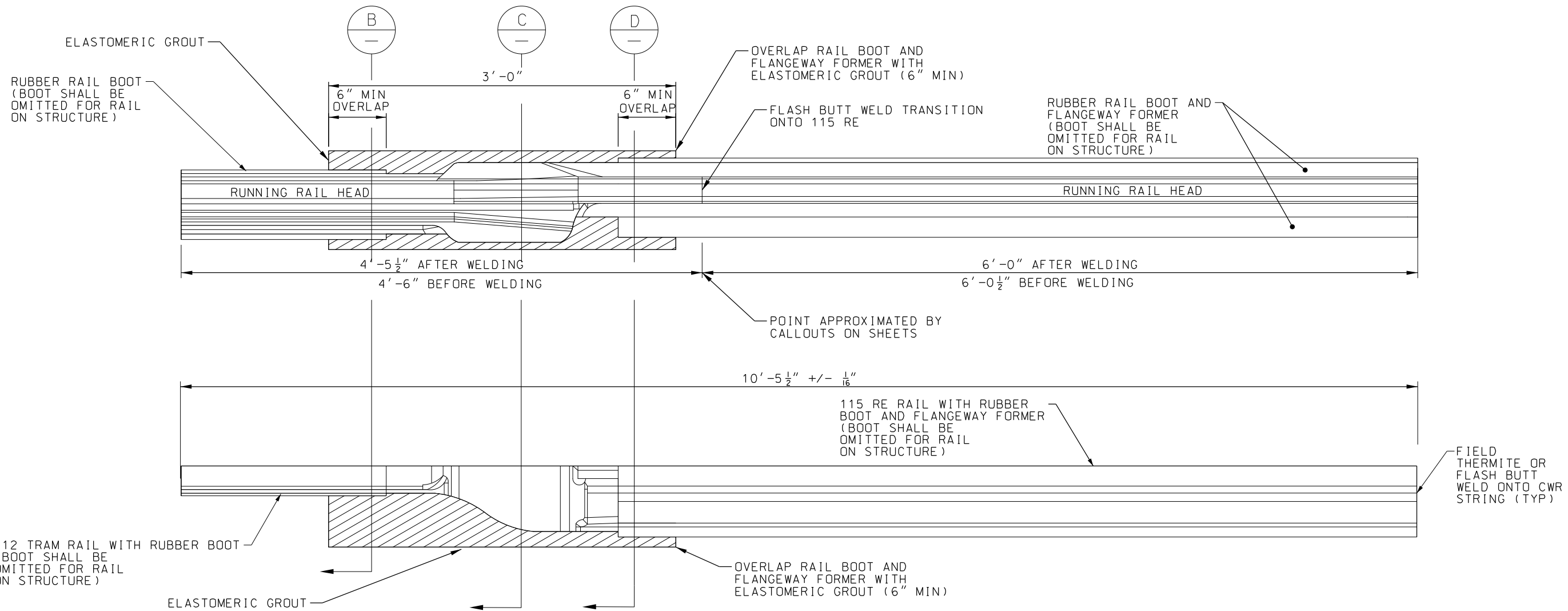


NOT FOR CONSTRUCTION

2 **KANSAS CITY STREETCAR - RIVERFRONT EXTENSION**

115 RE AND 112 TRAM RAIL SECTIONS

SCALE FOR 22"x34":	
NOT TO SCALE	
FILENAME:	
K906.dgn	
CONTRACT NO.:	
CONTRACT NO.***	
VOLUME:	
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DRAWING NO.:	SHEET NO.:
K906	70

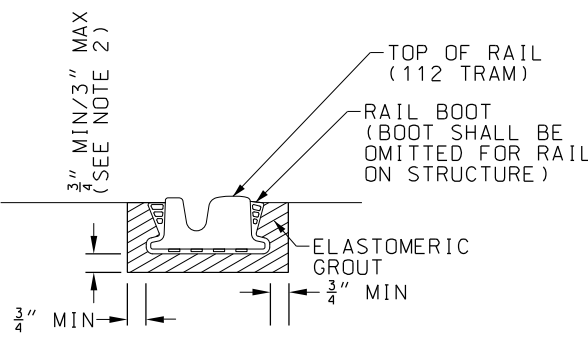


TRANSITION RAIL
PLAN AND ELEVATION

NOT TO SCALE

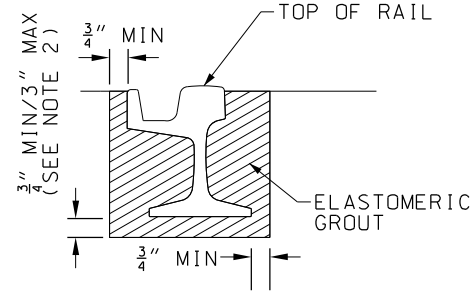
NOTES:

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL BY ENGINEER PRIOR TO MANUFACTURING TRANSITION RAIL.
2. A MINIMUM OF 7" CONCRETE DEPTH BELOW ELASTOMERIC GROUT REQUIRED. INCREASE TRACK SLAB DEPTH AS NEEDED TO ACHIEVE 7" DEPTH BELOW GROUT
3. CONTRACTOR TO FOLLOW ELASTOMERIC GROUT MANUFACTURER'S RECOMMENDATION FOR INSTALLATION.
4. WHERE TRANSITION RAIL ASSEMBLY CONFLICTS WITH STEEL GAUGE TIE, ADJUST GAUGE TIE(S) IN CONFLICT WITH SPACING NO GREATER THAN 7 1/2' TO AVOID CONFLICT. NO GAPS BETWEEN GAUGE TIES SHALL EXCEED 10'.
5. TRANSITION RAILS FOR THE GRAND BOULEVARD BRIDGE EXPANSION JOINTS WILL BE CURVED AT A CENTERLINE RADIUS OF 1616' ON THE SOUTHBOUND TRACK AND 1600' ON THE NORTHBOUND TRACK. SEE SHEET K923 FOR DETAILS AND PLAN AND PROFILE RIBBONS FOR STATIONING.



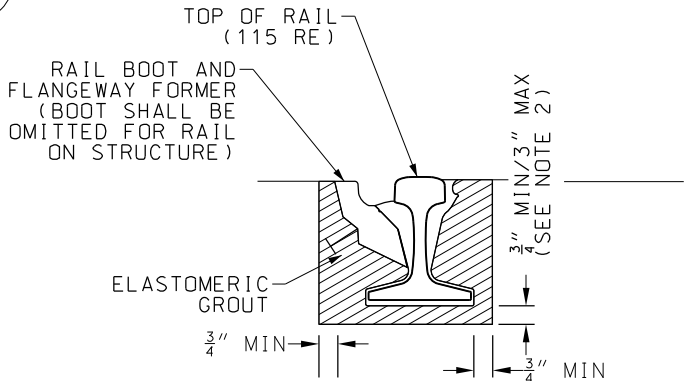
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SECTION

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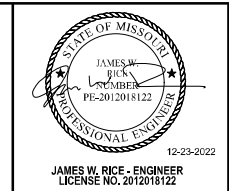
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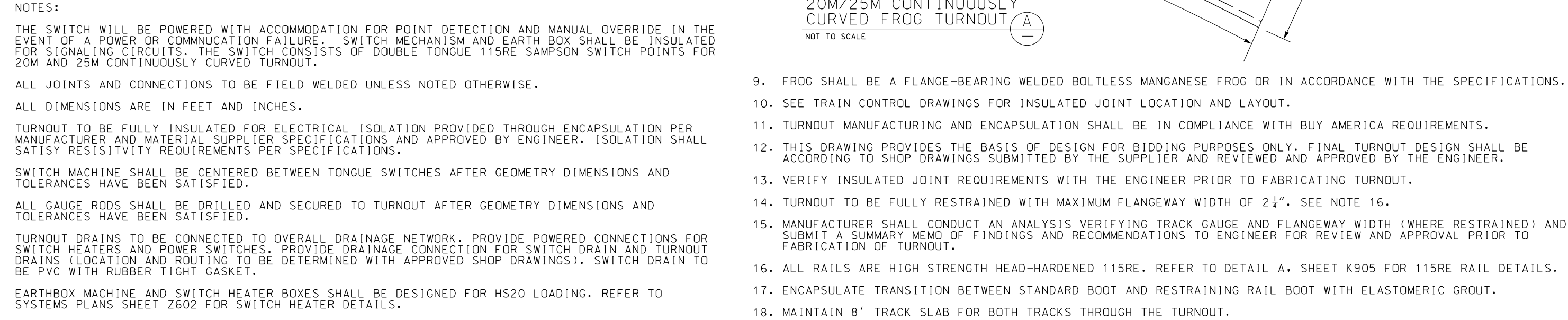
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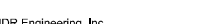


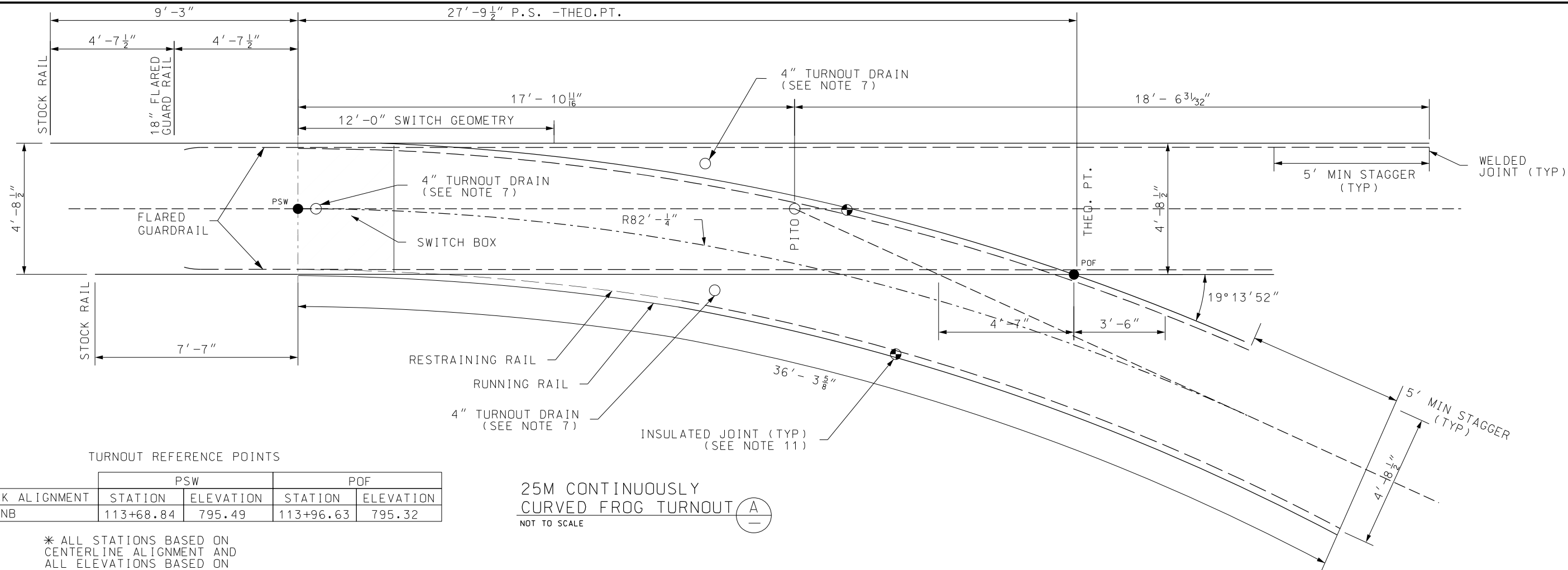
ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
TRANSITION RAIL	

SCALE FOR 22"x34": NOT TO SCALE	
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CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
K907	71



REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION 20M/25M EQUILATERAL CONTINUOUSLY CURVED FROG TURNOUT	SCALE FOR 22"x34": NOT TO SCALE
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			CHECKED BY	JWR				VOLUME: 1		
			APPROVED BY	NKS				DRAWING NO.: K908		
PLOT DATE: 12/23/2022			8:45:43 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION		SHEET NO.: 72	



TURNOUT #	TRACK ALIGNMENT	PSW		POF	
		STATION	ELEVATION	STATION	ELEVATION
11368	NB	113+68.84	795.49	113+96.63	795.32

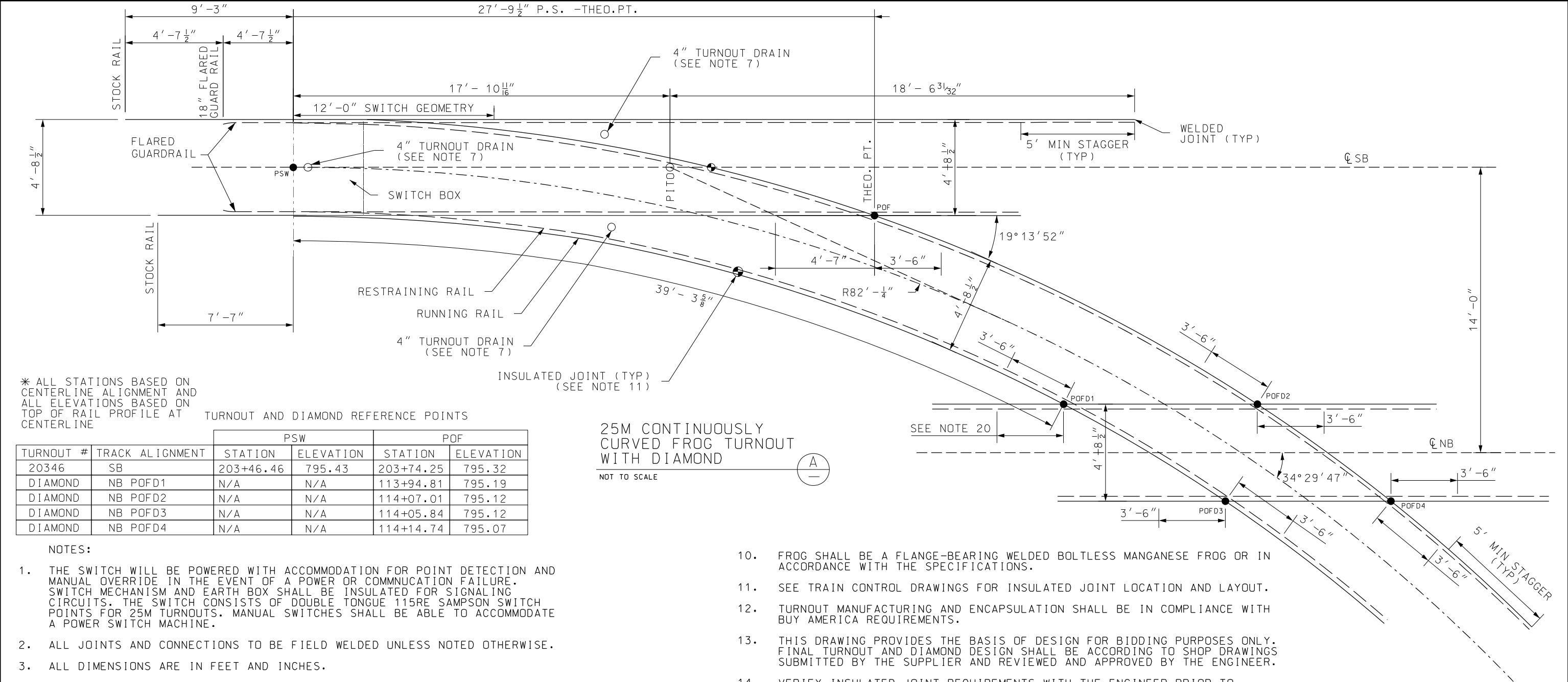
* ALL STATIONS BASED ON
CENTERLINE ALIGNMENT AND
ALL ELEVATIONS BASED ON
TOP OF RAIL PROFILE AT
CENTERLINE

NOTES:

- THE SWITCH WILL BE POWERED WITH ACCOMMODATION FOR POINT DETECTION AND MANUAL OVERRIDE IN THE EVENT OF A POWER OR COMMUNICATION FAILURE. SWITCH MECHANISM AND EARTH BOX SHALL BE INSULATED FOR SIGNALING CIRCUITS. THE SWITCH CONSISTS OF DOUBLE TONGUE 115RE SAMPSON SWITCH POINTS FOR 25M TURNOUTS. MANUAL SWITCHES SHALL BE ABLE TO ACCOMMODATE A POWER SWITCH MACHINE.
- ALL JOINTS AND CONNECTIONS TO BE FIELD WELDED UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS ARE IN FEET AND INCHES.
- TURNOUT TO BE FULLY INSULATED FOR ELECTRICAL ISOLATION PROVIDED THROUGH ENCAPSULATION PER MANUFACTURER AND MATERIAL SUPPLIER SPECIFICATIONS AND APPROVED BY ENGINEER. ISOLATION SHALL SATISFY RESISTIVITY REQUIREMENTS PER SPECIFICATIONS.
- SWITCH MACHINE SHALL BE CENTERED BETWEEN TONGUE SWITCHES AFTER GEOMETRY DIMENSIONS AND TOLERANCES HAVE BEEN SATISFIED.
- ALL GAUGE RODS SHALL BE DRILLED AND SECURED TO TURNOUT AFTER GEOMETRY DIMENSIONS AND TOLERANCES HAVE BEEN SATISFIED.
- TURNOUT DRAINS TO BE CONNECTED TO OVERALL DRAINAGE NETWORK. PROVIDE POWERED CONNECTIONS FOR SWITCH HEATERS AND POWER SWITCHES. PROVIDE DRAINAGE CONNECTION FOR SWITCH DRAIN AND TURNOUT DRAINS (LOCATION AND ROUTING TO BE DETERMINED WITH APPROVED SHOP DRAWINGS). SWITCH DRAIN TO BE PVC WITH RUBBER TIGHT GASKET.
- EARTHBOX MACHINE AND SWITCH HEATER BOXES SHALL BE DESIGNED FOR HS20 LOADING. REFER TO SYSTEMS PLANS SHEET Z602 FOR SWITCH HEATER DETAILS.
- RIGHT-HAND TURNOUT SHOWN, LEFT-HAND IS MIRROR IMAGE.

- FROG SHALL BE A FLANGE-BEARING WELDED BOLTLESS MANGANESE FROG OR IN ACCORDANCE WITH THE SPECIFICATIONS.
- SEE TRAIN CONTROL DRAWINGS FOR INSULATED JOINT LOCATION AND LAYOUT.
- TURNOUT MANUFACTURING AND ENCAPSULATION SHALL BE IN COMPLIANCE WITH BUY AMERICA REQUIREMENTS.
- THIS DRAWING PROVIDES THE BASIS OF DESIGN FOR BIDDING PURPOSES ONLY. FINAL TURNOUT DESIGN SHALL BE ACCORDING TO SHOP DRAWINGS SUBMITTED BY THE SUPPLIER AND REVIEWED AND APPROVED BY THE ENGINEER.
- VERIFY INSULATED JOINT REQUIREMENTS WITH THE ENGINEER PRIOR TO FABRICATING TURNOUT.
- TURNOUT TO BE FULLY RESTRAINED WITH MAXIMUM FLANGEWAY WIDTH OF 2 1/4". SEE NOTE 16.
- MANUFACTURER SHALL CONDUCT AN ANALYSIS VERIFYING TRACK GAUGE AND FLANGEWAY WIDTH (WHERE RESTRAINED) AND SUBMIT A SUMMARY MEMO OF FINDINGS AND RECOMMENDATIONS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF TURNOUT.
- ALL RAILS ARE HIGH STRENGTH HEAD-HARDENED 115RE. REFER TO DETAIL A, SHEET K906 FOR 115RE RAIL DETAILS.
- ENCAPSULATE TRANSITION BETWEEN STANDARD BOOT AND RESTRAINING RAIL BOOT WITH ELASTOMERIC GROUT.
- MAINTAIN 8' TRACK SLAB FOR STRAIGHT AND DIVERGING TRACK THROUGH THE TURNOUT.

REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":	
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										K909		73	



* ALL STATIONS BASED ON CENTERLINE ALIGNMENT AND ALL ELEVATIONS BASED ON TOP OF RAIL PROFILE AT CENTERLINE

TURNOUT AND DIAMOND REFERENCE POINTS

TURNOUT #	TRACK ALIGNMENT	PSW		POF	
		STATION	ELEVATION	STATION	ELEVATION
20346	SB	203+46.46	795.43	203+74.25	795.32
DIAMOND	NB POFD1	N/A	N/A	113+94.81	795.19
DIAMOND	NB POFD2	N/A	N/A	114+07.01	795.12
DIAMOND	NB POFD3	N/A	N/A	114+05.84	795.12
DIAMOND	NB POFD4	N/A	N/A	114+14.74	795.07

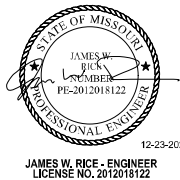
NOTES:

- THE SWITCH WILL BE POWERED WITH ACCOMMODATION FOR POINT DETECTION AND MANUAL OVERRIDE IN THE EVENT OF A POWER OR COMMUNICATION FAILURE. SWITCH MECHANISM AND EARTH BOX SHALL BE INSULATED FOR SIGNALING CIRCUITS. THE SWITCH CONSISTS OF DOUBLE TONGUE 115RE SAMPSON SWITCH POINTS FOR 25M TURNOUTS. MANUAL SWITCHES SHALL BE ABLE TO ACCOMMODATE A POWER SWITCH MACHINE.
- ALL JOINTS AND CONNECTIONS TO BE FIELD WELDED UNLESS NOTED OTHERWISE.
- ALL DIMENSIONS ARE IN FEET AND INCHES.
- TURNOUT AND DIAMOND TO BE FULLY INSULATED FOR ELECTRICAL ISOLATION PROVIDED THROUGH ENCAPSULATION PER MANUFACTURER AND MATERIAL SUPPLIER SPECIFICATIONS AND APPROVED BY ENGINEER. ISOLATION SHALL SATISFY RESISTIVITY REQUIREMENTS PER SPECIFICATIONS.
- SWITCH MACHINE SHALL BE CENTERED BETWEEN TONGUE SWITCHES AFTER GEOMETRY DIMENSIONS AND TOLERANCES HAVE BEEN SATISFIED.
- ALL GAUGE RODS SHALL BE DRILLED AND SECURED TO TURNOUT AFTER GEOMETRY DIMENSIONS AND TOLERANCES HAVE BEEN SATISFIED.
- TURNOUT DRAINS TO BE CONNECTED TO OVERALL DRAINAGE NETWORK. PROVIDE POWERED CONNECTIONS FOR SWITCH HEATERS AND POWER SWITCHES. PROVIDE DRAINAGE CONNECTION FOR SWITCH DRAIN AND TURNOUT DRAINS (LOCATION AND ROUTING TO BE DETERMINED WITH APPROVED SHOP DRAWINGS). SWITCH DRAIN TO BE PVC WITH RUBBER TIGHT GASKET.
- EARTHBOX MACHINE AND SWITCH HEATER BOXES SHALL BE DESIGNED FOR HS20 LOADING. REFER TO SYSTEMS PLANS SHEET Z602 FOR SWITCH HEATER DETAILS.
- RIGHT-HAND TURNOUT SHOWN, LEFT-HAND IS MIRROR IMAGE.

- FROG SHALL BE A FLANGE-BEARING WELDED BOLTLESS MANGANESE FROG OR IN ACCORDANCE WITH THE SPECIFICATIONS.
- SEE TRAIN CONTROL DRAWINGS FOR INSULATED JOINT LOCATION AND LAYOUT.
- TURNOUT MANUFACTURING AND ENCAPSULATION SHALL BE IN COMPLIANCE WITH BUY AMERICA REQUIREMENTS.
- THIS DRAWING PROVIDES THE BASIS OF DESIGN FOR BIDDING PURPOSES ONLY. FINAL TURNOUT AND DIAMOND DESIGN SHALL BE ACCORDING TO SHOP DRAWINGS SUBMITTED BY THE SUPPLIER AND REVIEWED AND APPROVED BY THE ENGINEER.
- VERIFY INSULATED JOINT REQUIREMENTS WITH THE ENGINEER PRIOR TO FABRICATING TURNOUT AND DIAMOND.
- TURNOUT AND DIAMOND TO BE FULLY RESTRAINED WITH MAXIMUM FLANGWAY WIDTH OF 2 1/4". SEE NOTE 16.
- MANUFACTURER SHALL CONDUCT AN ANALYSIS VERIFYING TRACK GAUGE AND FLANGWAY WIDTH (WHERE RESTRAINED) AND SUBMIT A SUMMARY MEMO OF FINDINGS AND RECOMMENDATIONS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF TURNOUT.
- ALL RAILS ARE HIGH STRENGTH HEAD-HARDENED 115RE. REFER TO DETAIL A, SHEET K906 FOR 115RE RAIL DETAILS.
- ENCAPSULATE TRANSITION BETWEEN STANDARD BOOT AND RESTRAINING RAIL BOOT WITH ELASTOMERIC GROUT.
- MAINTAIN 8' TRACK SLAB FOR STRAIGHT AND DIVERGING TRACK THROUGH THE TURNOUT AND DIAMOND.
- STOCK RAILS TO BE FIELD CUT TO ALLOW FOR SINGLE WELD AT END OF TURNOUT AND BEGINNING OF DIAMOND.

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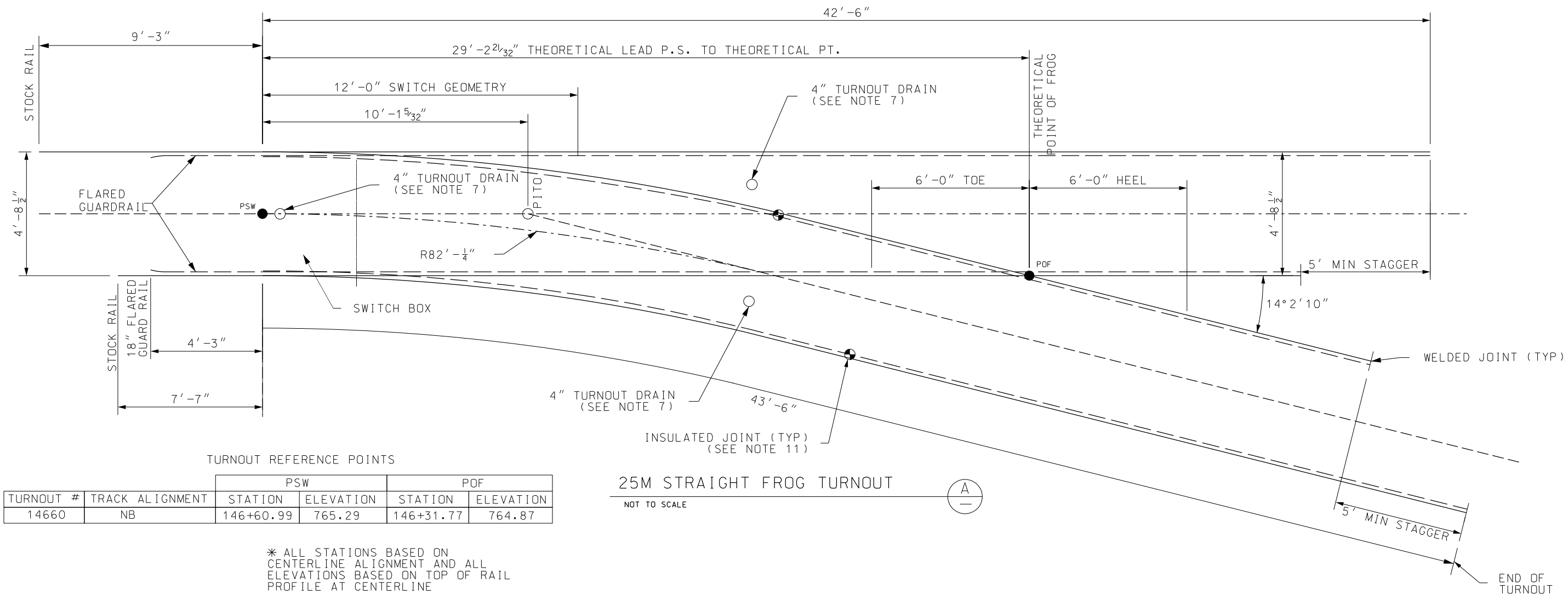


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KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

25M CONTINUOUSLY CURVED FROG
TURNOUT WITH DIAMOND

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: K910.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.:	SHEET NO.:
K910	74



* ALL STATIONS BASED ON CENTERLINE ALIGNMENT AND ALL ELEVATIONS BASED ON TOP OF RAIL PROFILE AT CENTERLINE

NOTES:

1. THE SWITCH WILL BE POWERED WITH ACCOMMODATION FOR POINT DETECTION AND MANUAL OVERRIDE IN THE EVENT OF A POWER OR COMMUNICATION FAILURE. SWITCH MECHANISM AND EARTH BOX SHALL BE INSULATED FOR SIGNALING CIRCUITS. THE SWITCH CONSISTS OF DOUBLE TONGUE 115RE SAMPSON SWITCH POINTS FOR 25M TURNOUTS. MANUAL SWITCHES SHALL BE ABLE TO ACCOMMODATE A POWER SWITCH MACHINE.

2. ALL JOINTS AND CONNECTIONS TO BE FIELD WELDED UNLESS NOTED OTHERWISE.

3. ALL DIMENSIONS ARE IN FEET AND INCHES.

4. TURNOUT TO BE FULLY INSULATED FOR ELECTRICAL ISOLATION PROVIDED THROUGH ENCAPSULATION PER MANUFACTURER AND MATERIAL SUPPLIER SPECIFICATIONS AND APPROVED BY ENGINEER. ISOLATION SHALL SATISY RESISITVITY REQUIREMENTS PER SPECIFICATIONS.

5. SWITCH MACHINE SHALL BE CENTERED BETWEEN TONGUE SWITCHES AFTER GEOMETRY DIMENSIONS AND TOLERANCES HAVE BEEN SATISFIED.

6. ALL GAUGE RODS SHALL BE DRILLED AND SECURED TO TURNOUT AFTER GEOMETRY DIMENSIONS AND TOLERANCES HAVE BEEN SATISFIED.

7. TURNOUT DRAINS TO BE CONNECTED TO OVERALL DRAINAGE NETWORK. PROVIDE POWERED CONNECTIONS FOR SWITCH HEATERS AND POWER SWITCHES. PROVIDE DRAINAGE CONNECTION FOR SWITCH DRAIN AND TURNOUT DRAINS (LOCATION AND ROUTING TO BE DETERMINED WITH APPROVED SHOP DRAWINGS). SWITCH DRAIN TO BE PVC WITH RUBBER TIGHT GASKET.

8. EARTHBOX MACHINE AND SWITCH HEATER BOXES SHALL BE DESIGNED FOR HS20 LOADING. REFER TO SYSTEMS PLANS SHEET Z602 FOR SWITCH HEATER DETAILS.

9. RIGHT-HAND TURNOUT SHOWN, LEFT-HAND IS MIRROR IMAGE.
10. FROG SHALL BE A FLANGE-BEARING WELDED BOLTLESS MANGANESE FROG IN ACCORDANCE WITH THE SPECIFICATIONS.

11. SEE TRAIN CONTROL DRAWINGS FOR INSULATED JOINT LOCATION AND LAYOUT.

12. TURNOUT MANUFACTURING AND ENCAPSULATION SHALL BE IN COMPLIANCE WITH BUY AMERICA REQUIREMENTS.

13. THIS DRAWING PROVIDES THE BASIS OF DESIGN FOR BIDDING PURPOSES ONLY. FINAL TURNOUT DESIGN SHALL BE ACCORDING TO SHOP DRAWINGS SUBMITTED BY THE SUPPLIER AND REVIEWED AND APPROVED BY THE ENGINEER.

14. VERIFY INSULATED JOINT REQUIREMENTS WITH THE ENGINEER PRIOR TO FABRICATING TURNOUT.

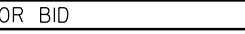
15. TURNOUT TO BE FULLY RESTRAINED WITH MAXIMUM FLANGEWAY WIDTH OF 2 1/4". SEE NOTE 16.

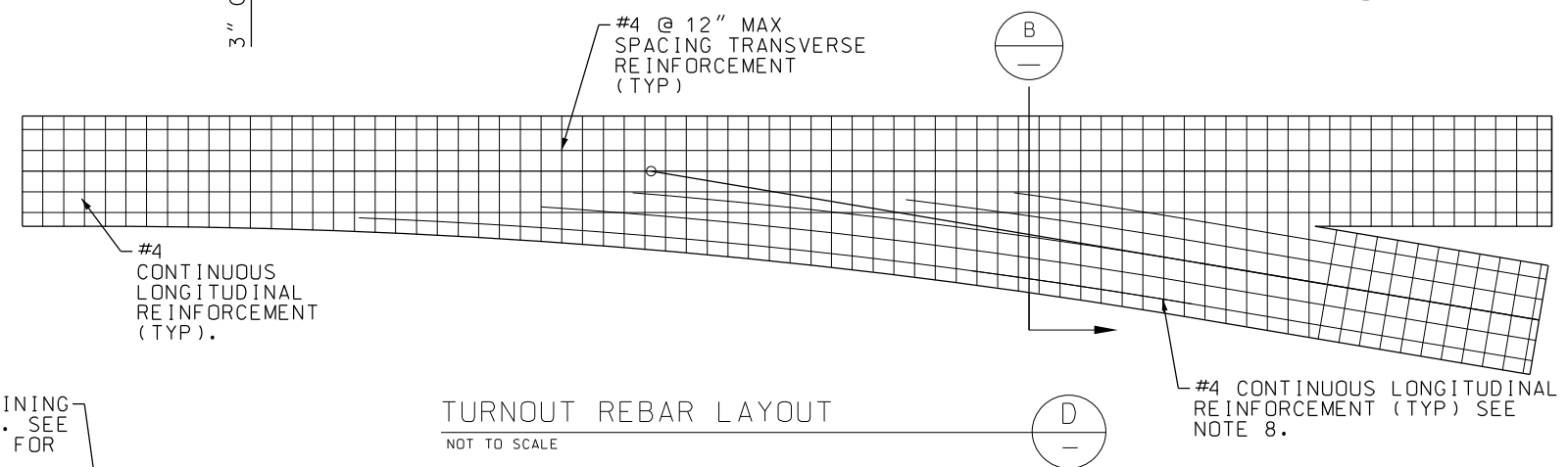
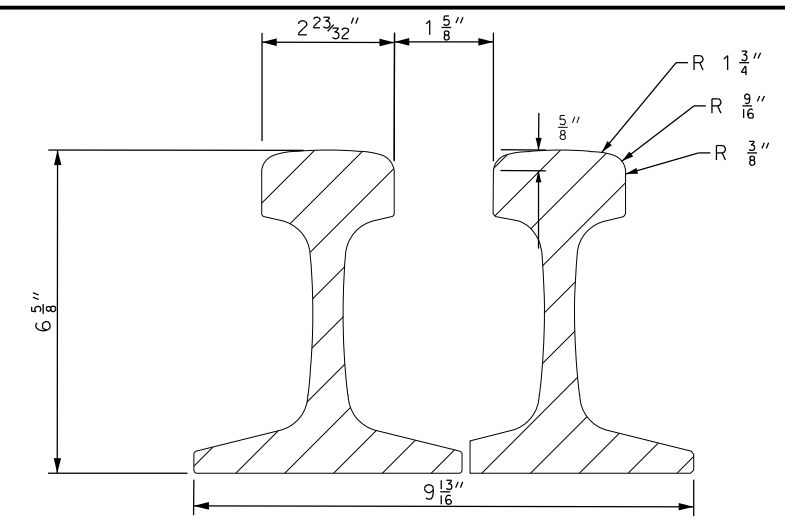
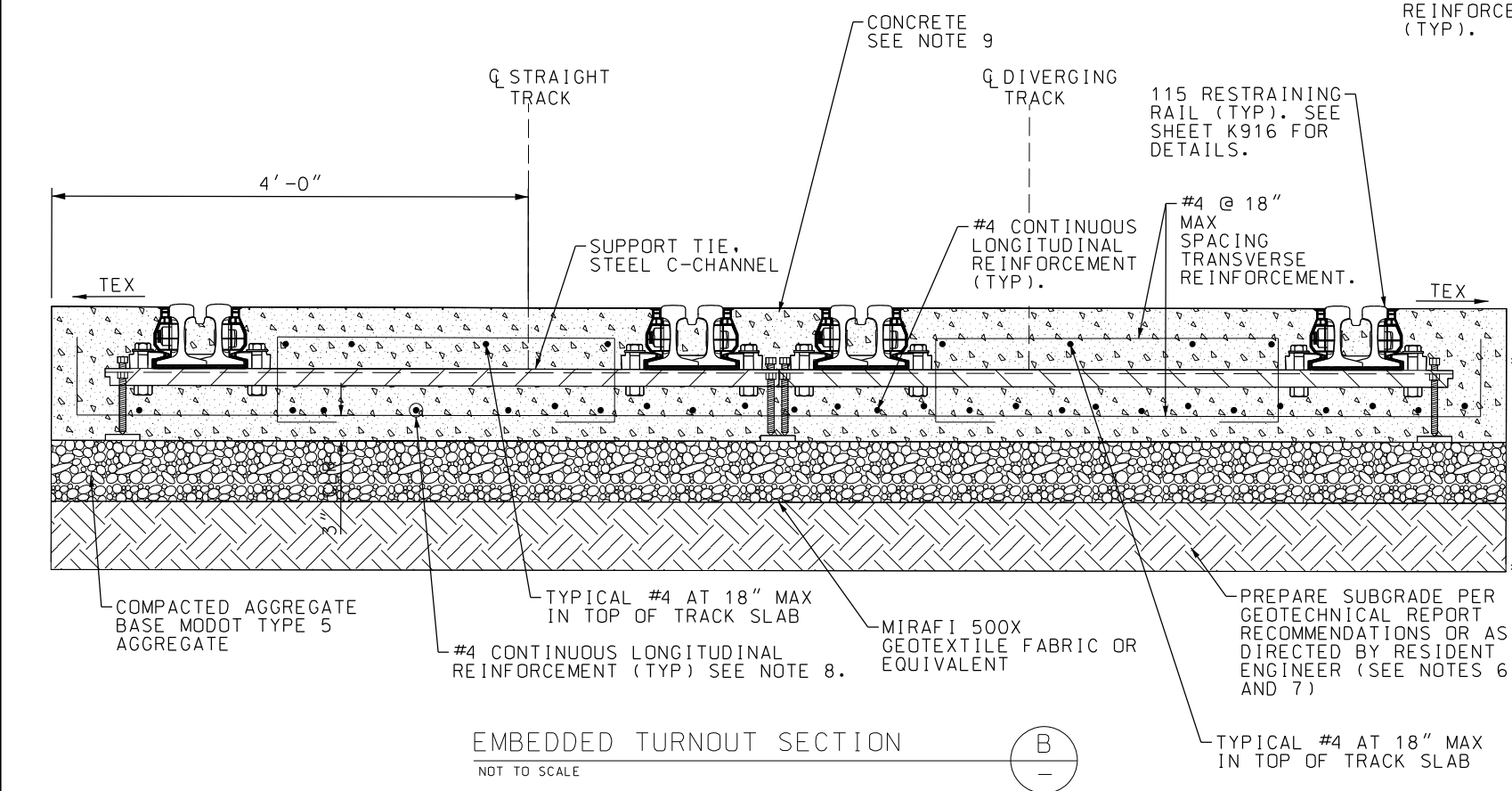
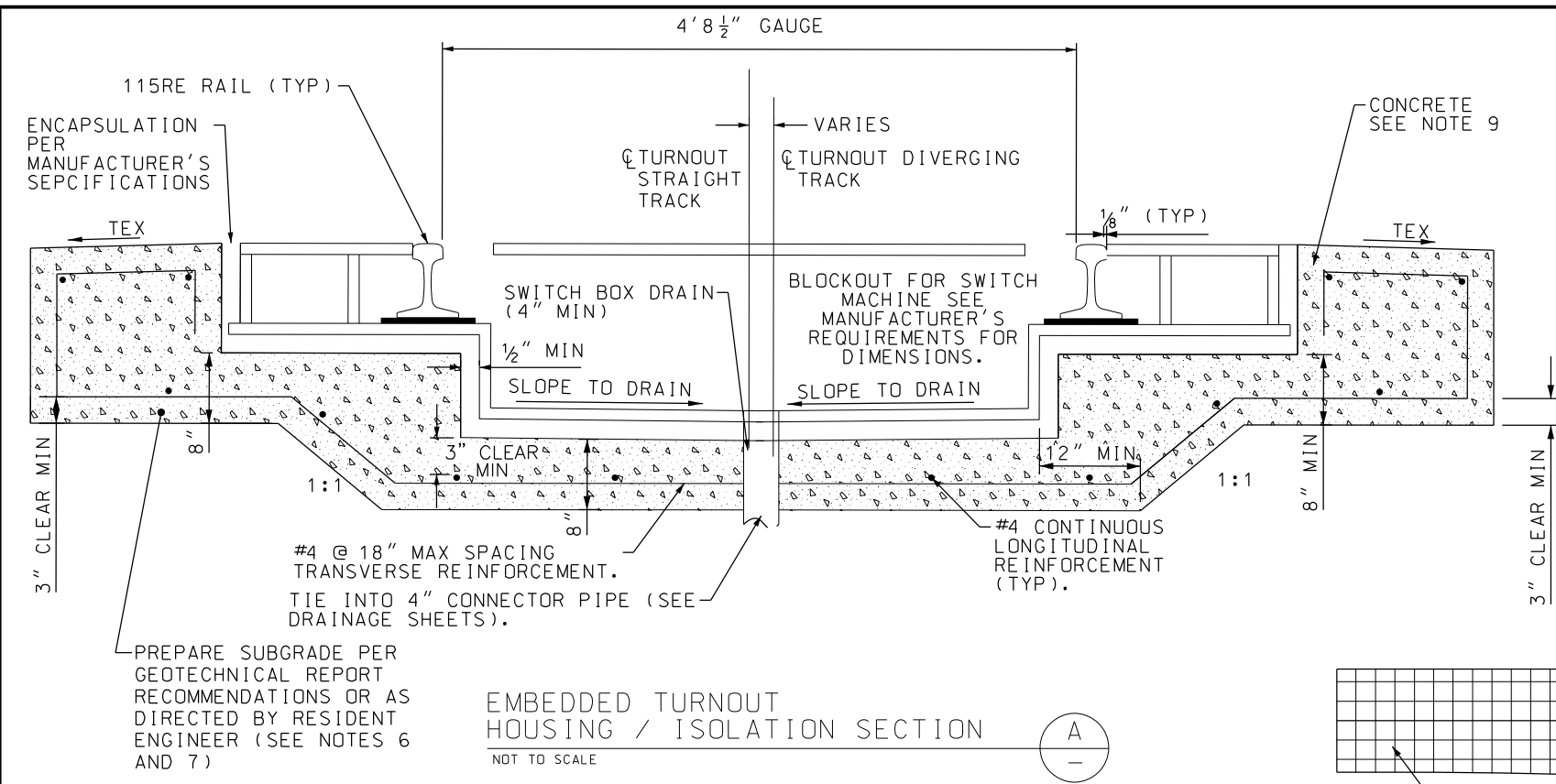
16. MANUFACTURER SHALL CONDUCT AN ANALYSIS VERIFYING TRACK GAUGE AND FLANGEWAY WIDTH (WHERE RESTRAINED) AND SUBMIT A SUMMARY MEMO OF FINDINGS AND RECOMMENDATIONS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF TURNOUT.

17. ALL RAILS ARE HIGH STRENGTH HEAD-HARDENED 115RE. REFER TO DETAIL A, SHEET K906 FOR 115RE RAIL DETAILS.

18. ENCAPSULATE TRANSITION BETWEEN STANDARD BOOT AND RESTRAINING RAIL BOOT WITH ELASTOMERIC GROUT.

19. MAINTAIN 8' TRACK SLAB FOR STRAIGHT AND DIVERGING TRACK THROUGH THE TURNOUT.

REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":	
			CHECKED BY	JWR				NOT TO SCALE		FILENAME:	
			DRAWN BY	MMO				CONTRACT NO.:			
			CHECKED BY	JWR				CONTRACT NO. ***		VOLUME:	
			APPROVED BY	NKS				DRAWING NO.:		SHEET NO.:	
PLOT DATE: 12/23/2022			8:45:50 AM		DATE	12-23-2022	25M STRAIGHT FROG TURNOUT			K911	75



- NOTES
- ALL RAILS ARE HEAD-HARDENED 115RE. REFER TO DETAIL A, SHEET K906 FOR 115RE DETAILS.
 - TOP OF CONCRETE BETWEEN RAILS IS 1/4" BELOW TOP OF RAIL.
 - TRACK EDGE CROSS-SLOPE (TEX) ARE SHOWN ON PLAN AND PROFILE DRAWINGS AND SHALL BE FIELD ADJUSTED TO MINIMIZE ROADWAY REGRADING. COORDINATE WITH ENGINEER FOR APPROVAL. UNLESS ADJACENT TO PARKING LANE OR CURB, CROSS-SLOPES ADJACENT TO TRAVEL LANES NOT TO EXCEED 5% WITHOUT APPROVAL OF ENGINEER.
 - ALL TRACK SHALL HAVE 1:40 CANT, UNLESS OTHERWISE SPECIFIED.
 - SEE SHEET K906 FOR FLANGWAY WIDTH REQUIREMENTS.
 - REFER TO PROJECT GEOTECHNICAL REPORT FOR ENGINEERING RECOMMENDATIONS REGARDING UNSUITABLE MATERIAL. SUBMIT OVER EXCAVATION BACKFILL MATERIAL FOR REVIEW AND APPROVAL BY ENGINEER.
 - SUBGRADE REQUIRED TO MEET COMPACTION REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.
 - THE DIVERGING TRACK CONTINUOUS LONGITUDINAL REINFORCEMENT SHALL BE EXTENDED 15'-0" INTO THE TURNOUT TRACK SLAB. THESE BARS SHALL BE PLACED IN ADDITION TO AND ON TOP OF THE LONGITUDINAL REINFORCEMENT THAT IS PLACED PARALLEL WITH THE STRAIGHT TRACK.
 - ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY PER KCMO PUBLIC WORKS DEPARTMENT STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT.

REV	DATE	DESCRIPTION

PLOT DATE: 12/23/2022 8:45:52 AM

DESIGNED BY	MMO
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS

DATE 12-23-2022

JAMES W. RICE - ENGINEER
LICENSE NO. 2012018122

ISSUED FOR BID

DATE: 12-23-2022

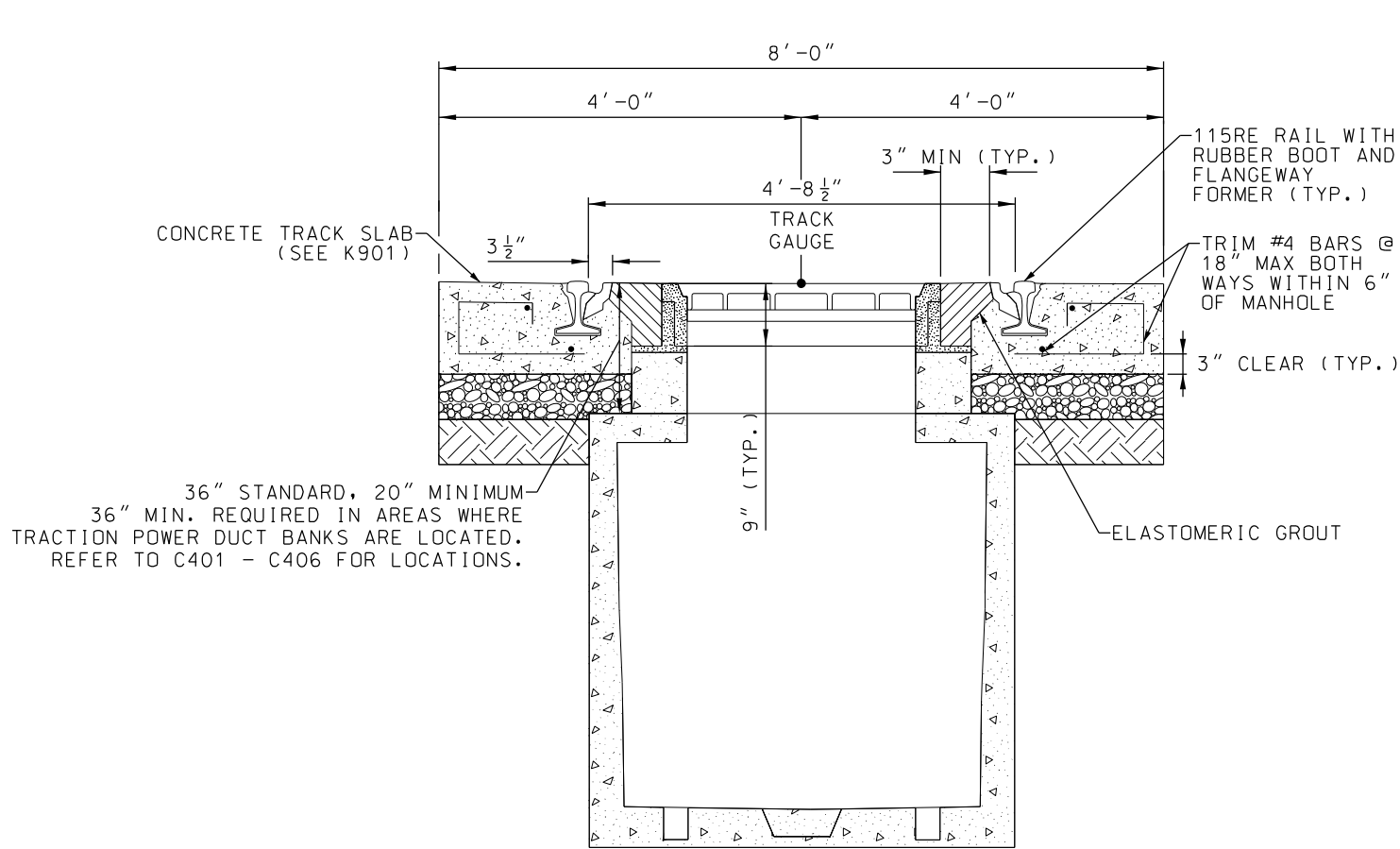
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TURNOUT ENCAPSULATION AND SECTION DETAILS

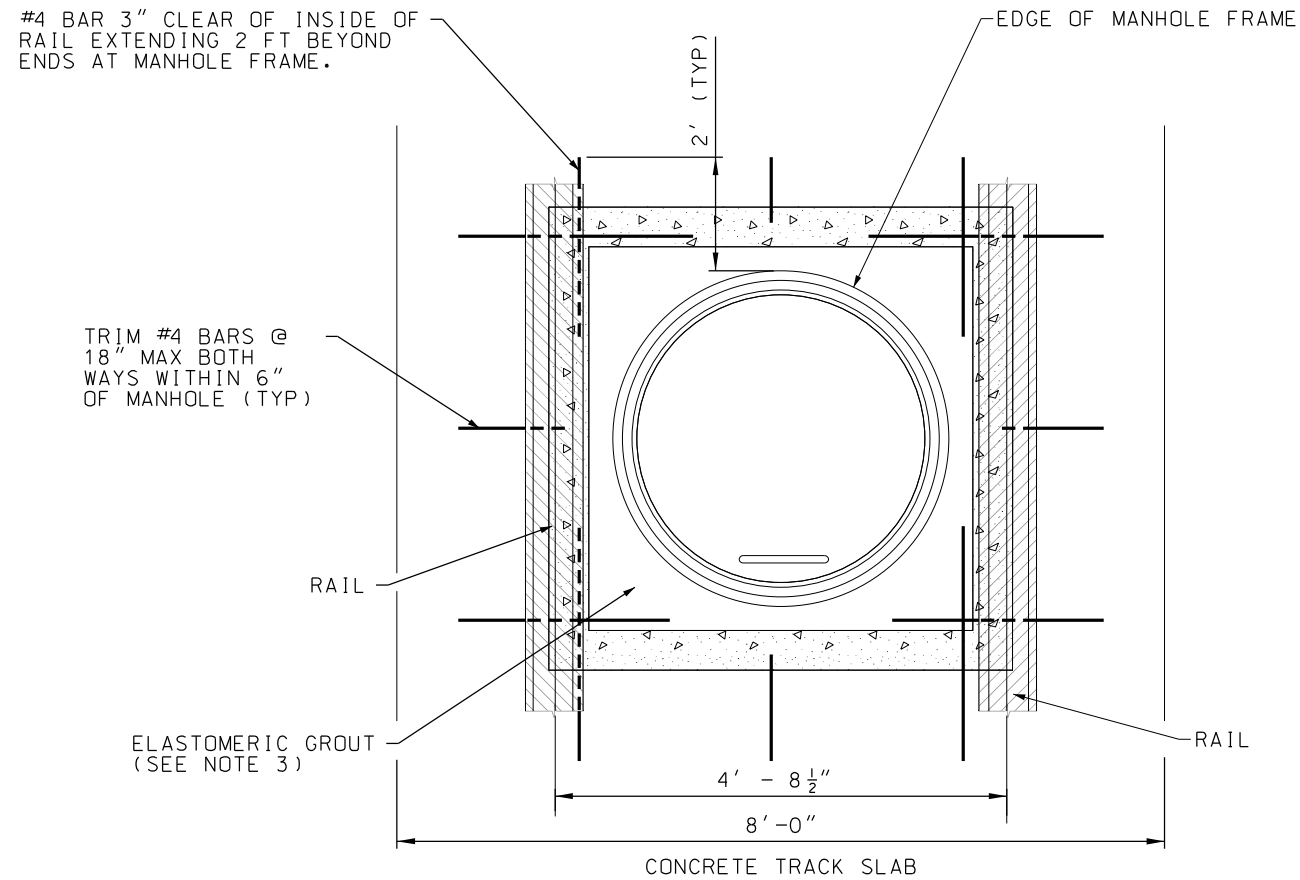
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FILENAME: K912.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.: K912	SHEET NO.: 76



36" STANDARD, 20" MINIMUM
36" MIN. REQUIRED IN AREAS WHERE
TRACTION POWER DUCT BANKS ARE LOCATED.
REFER TO C401 - C406 FOR LOCATIONS.

TRACK SLAB WITH MANHOLE
BETWEEN THE RAILS DETAIL

NOT TO SCALE



TRIM #4 BARS @
18" MAX BOTH
WAYS WITHIN 6"
OF MANHOLE (TYP)

ELASTOMERIC GROUT
(SEE NOTE 3)

MANHOLE PLAN VIEW

NOT TO SCALE



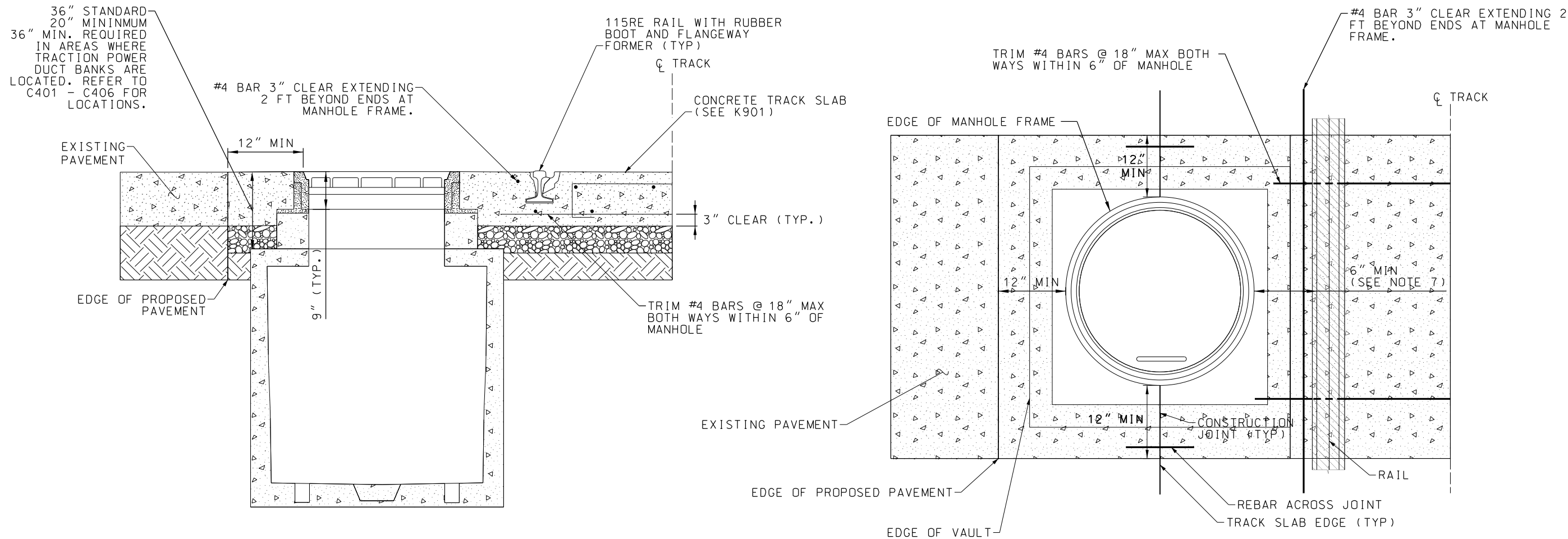
NOTES:

1. TRACK GAUGE IS MEASURED AT $\frac{5}{8}$ " BELOW TOP OF RAIL AND FROM THE GAUGE FACE TO GAUGE FACE.
2. WHERE MANHOLE CONFLICTS WITH STEEL GAUGE TIE, ADJUST GAUGE TIE(S) IN CONFLICT WITH SPACING NO GREATER THAN $7\frac{1}{2}$ ' TO AVOID CONFLICT. NO GAPS BETWEEN GAUGE TIES SHALL EXCEED 10'.
3. FIELD FIT MANHOLES BETWEEN RAILS TO MAKE THE MANHOLE SURROUNDING MATERIAL LOOK CLEANER WHEN FINISHED, MATCHING THE MATERIAL USED IN THE SMALLEST TRANSVERSE OFFSET.
4. MANHOLE SHOWN IN DETAIL, BUT SAME REQUIREMENTS APPLY FOR INLETS OF DIFFERENT SHAPES AND MATERIALS.
5. UTILITY LOCATIONS TO BE VERIFIED BY CONTRACTOR IN THE FIELD.
6. ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY. PER KCMO PUBLIC WORKS DEPARTMENT'S STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT.
7. CONTROL JOINTS MAY BE PLACED AT MANHOLE TO CONTROL CRACKING.

WORK DONE AT LOCATIONS WITH A
MANHOLE BETWEEN THE RAILS NEEDS
TO BE COORDINATED WITH CITY AND
STREETCAR AUTHORITY.



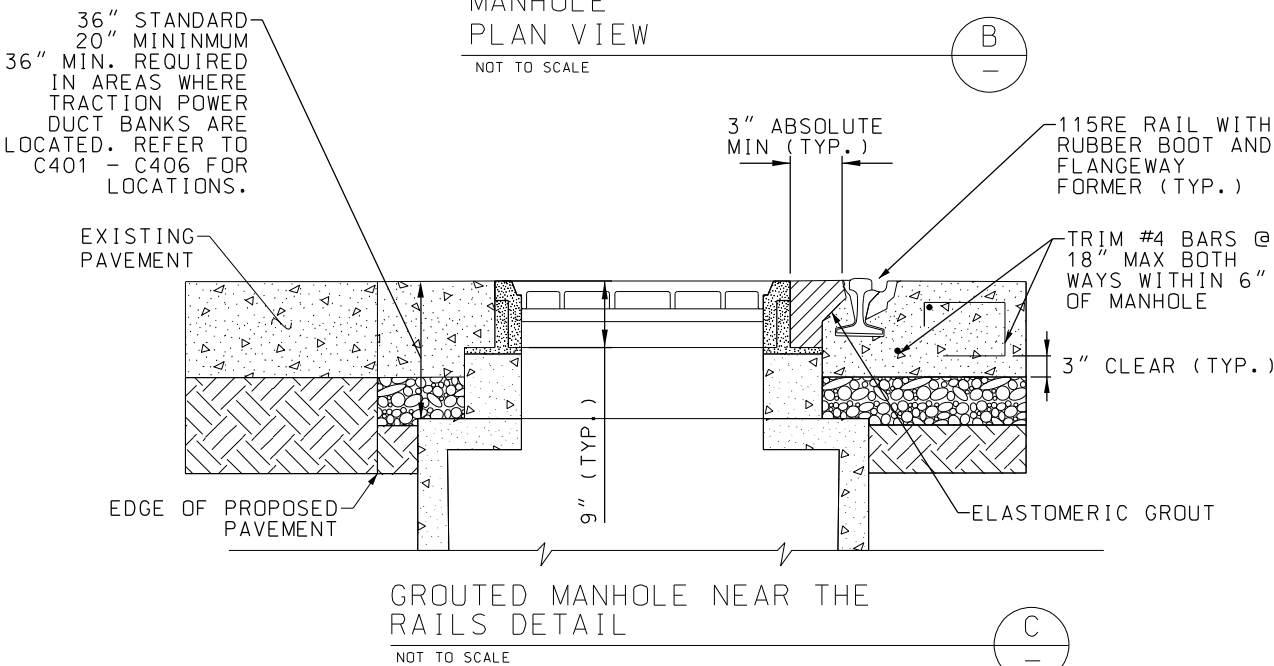
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PLOT DATE: 12/23/2022			8:45:55 AM		DATE 12-23-2022		NOT FOR CONSTRUCTION				



TRACK SLAB WITH MANHOLE
NEAR THE RAILS DETAIL
NOT TO SCALE



MANHOLE
PLAN VIEW
NOT TO SCALE

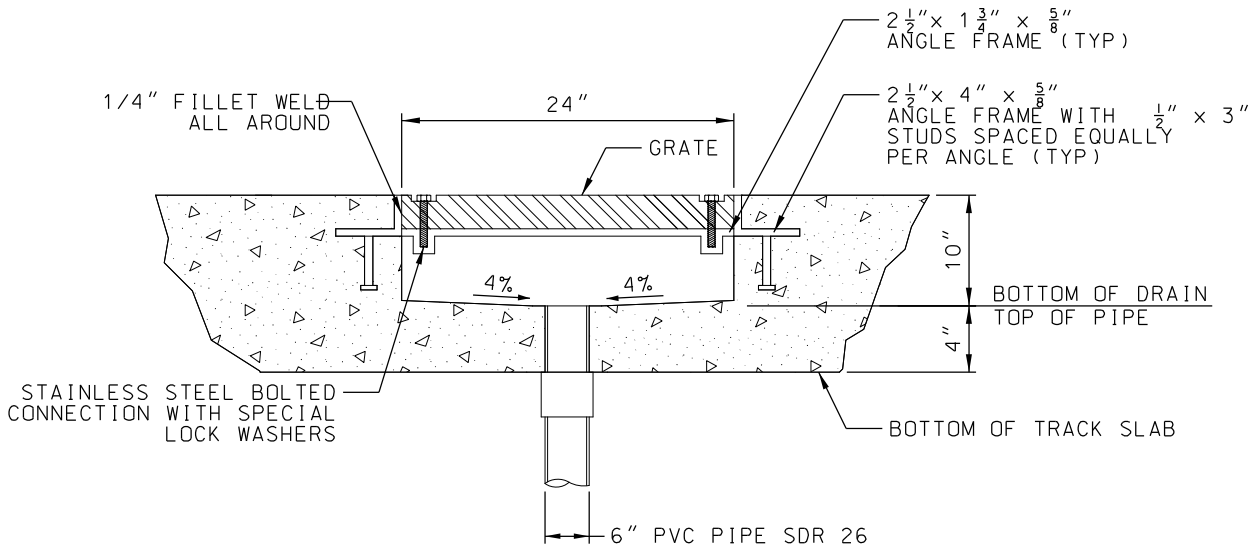
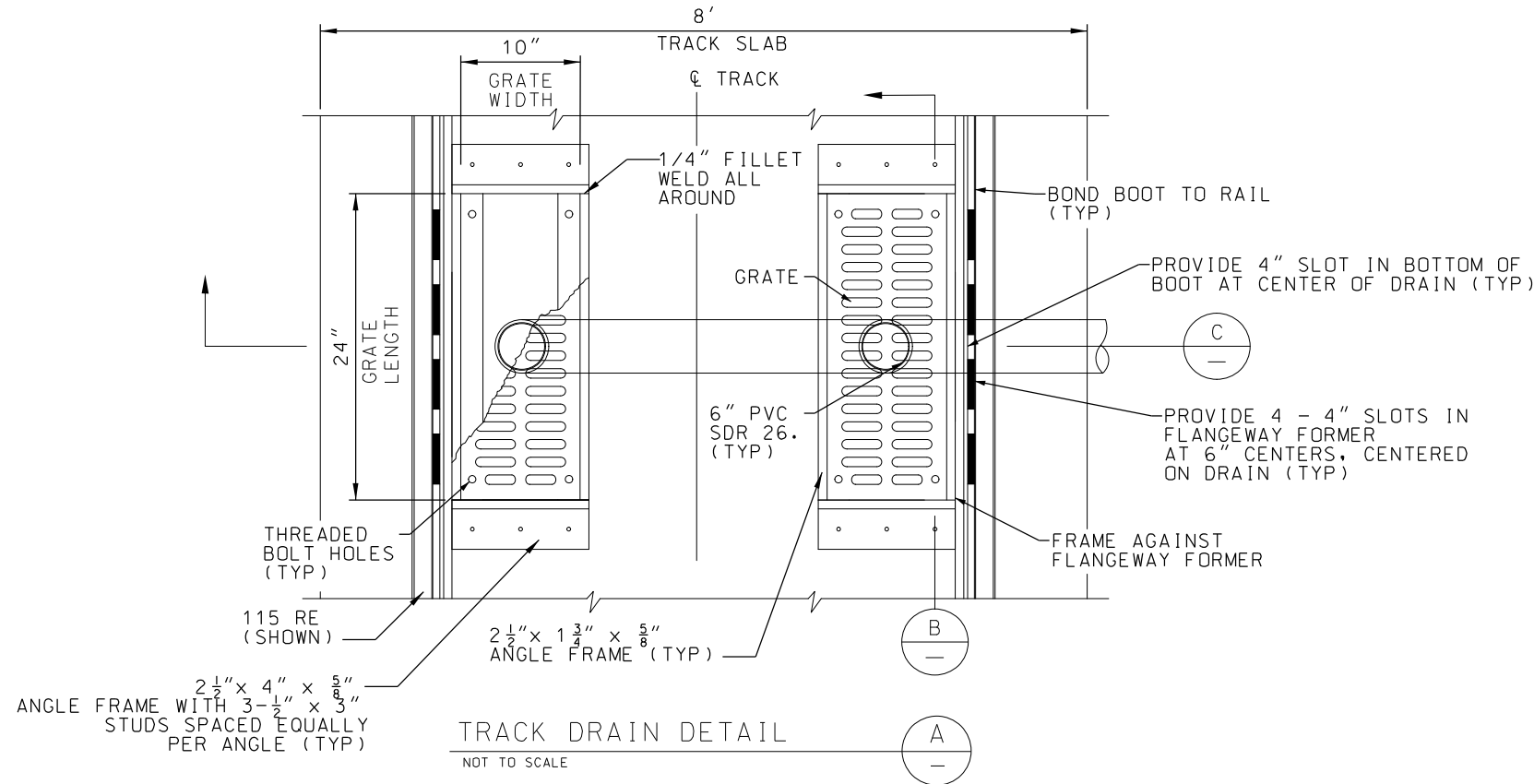


GROUTED MANHOLE NEAR THE
RAILS DETAIL
NOT TO SCALE



- NOTES:
1. TRACK GAUGE IS MEASURED AT $\frac{5}{8}$ " BELOW TOP OF RAIL AND FROM THE GAUGE FACE TO GAUGE FACE.
 2. WHERE MANHOLE CONFLICTS WITH STEEL GAUGE TIE, ADJUST GAUGE TIE(S) IN CONFLICT WITH SPACING NO GREATER THAN $7\frac{1}{2}$ ' TO AVOID CONFLICT. NO GAPS BETWEEN GAUGE TIES SHALL EXCEED 10'.
 3. MANHOLE SHOWN IN DETAIL, BUT SAME REQUIREMENTS APPLY FOR INLETS OF DIFFERENT SHAPES AND MATERIALS.
 4. UTILITY LOCATIONS TO BE VERIFIED BY CONTRACTOR IN THE FIELD.
 5. ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY, PER KCMO PUBLIC WORKS DEPARTMENT'S STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT.
 6. CONTROL JOINTS MAY BE PLACED AT MANHOLE TO CONTROL CRACKING.
 7. IF MANHOLE IS BETWEEN 3" AND 6" OF RAIL BOOT, GROUT BETWEEN MANHOLE AND RAIL PER DETAIL C.

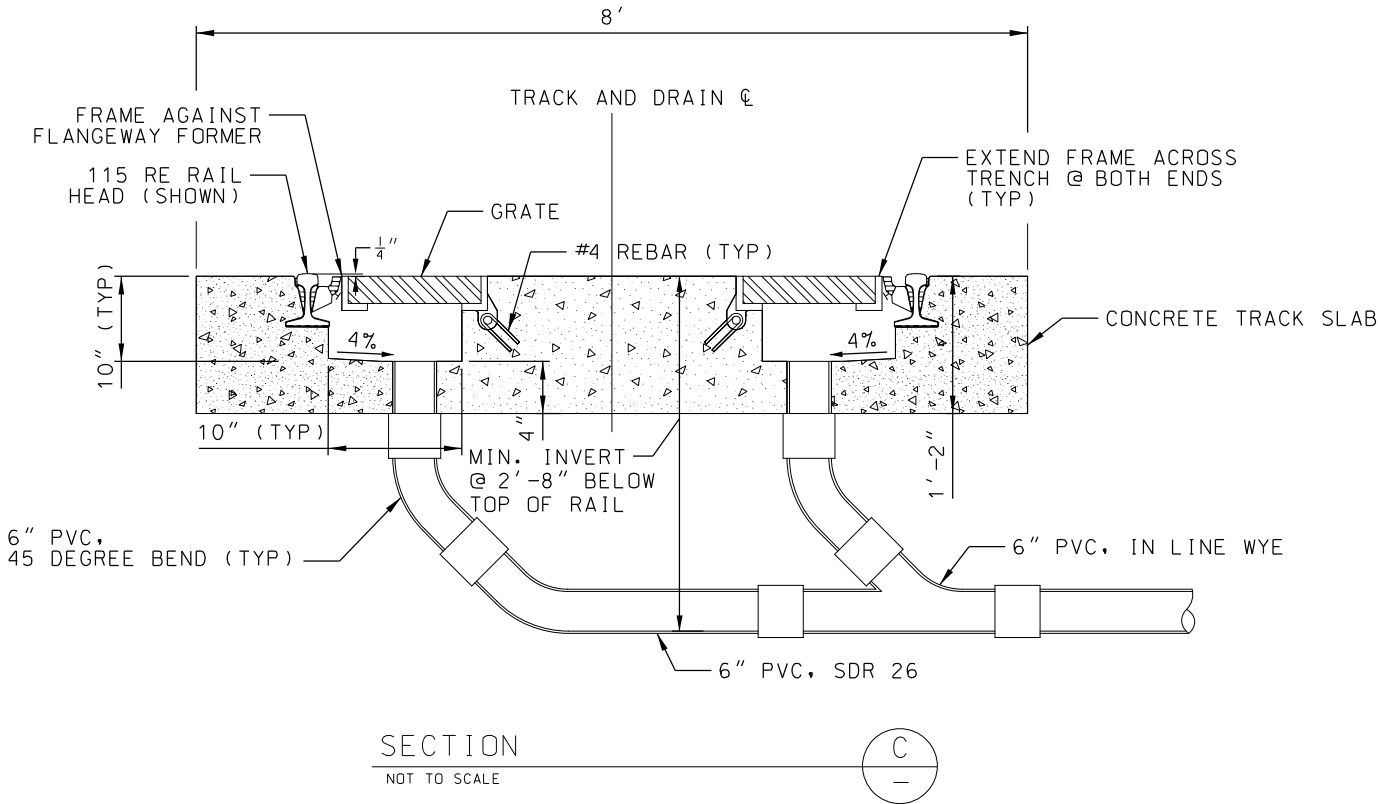
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PLOT DATE: 12/23/2022			8:45:57 AM		DATE		12-23-2022		MANHOLE REBAR DETAIL SHEET 2 OF 2		
NOT FOR CONSTRUCTION								K914		78	



SECTION B-B
NOT TO SCALE

NOTES:

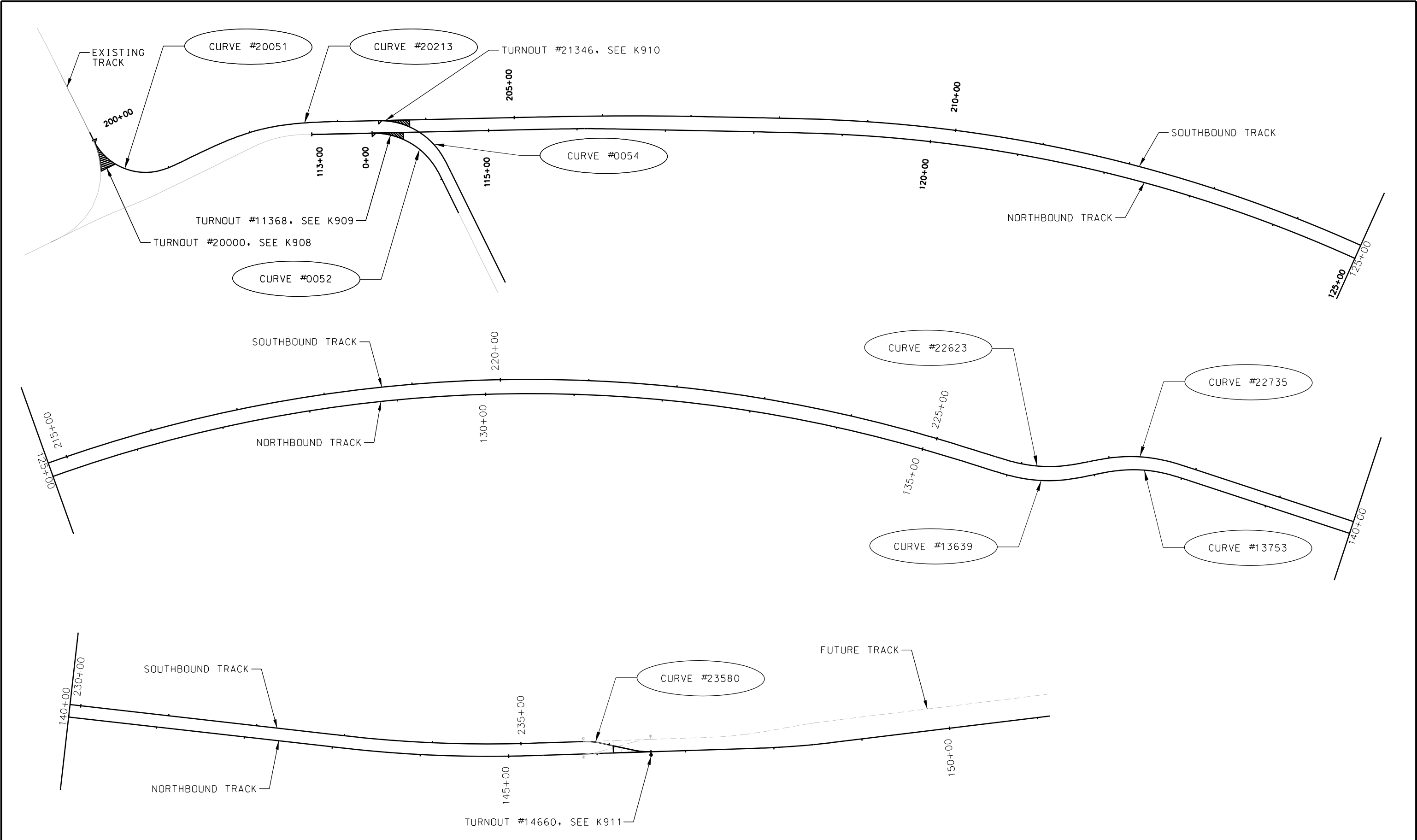
1. CONTRACTOR TO SUBMIT ANGLE FRAME, GRATE, BOLT AND WELD SHOP DRAWINGS TO ENGINEER FOR REVIEW PRIOR TO FABRICATION.
2. CONCRETE SURFACE SHALL BE GRADED TO MATCH TOP OF STEEL GRATING.
3. GRATES ARE TO BE BOLTED TO FRAME WITH A MINIMUM OF ONE BOLT IN EVERY CORNER.
4. TRACK DRAIN ASSEMBLY MUST BE TRAFFIC RATED TO HS20 CAPACITY.
5. GRATES TO BE EJIW TYPE 6900 (OR EQUIVALENT), MODIFY TO DIMENSIONS SHOWN. GRATES TO BE BICYCLE SAFE AND IF IN A CROSSWALK, OPENINGS SHOULD BE PERPENDICULAR TO WALK PATH.
6. CONTRACTOR MAY SUBMIT PREFABRICATED TRACK DRAIN FOR REVIEW AND APPROVAL AS AN ALTERNATE TO CAST IN PLACE TRACK DRAIN.
7. SEE DRAINAGE PLANS FOR REQUIRED PIPE LAYOUT.
8. ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY PER KCMO PUBLIC WORKS DEPARTMENT STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT. SEE SHEET K901 DETAIL A FOR TRACK SLAB REINFORCING AND SUBGRADE PREPARATION DETAILS.
9. ADJUST TRANSVERSE TRACK REINFORCING AT TRACK DRAINS TO MAINTAIN MAXIMUM SPACING OF 18" BETWEEN BARS. RUN LONGITUDINAL BARS CONTINUOUSLY WHERE NOT IN CONFLICT WITH DRAINS.

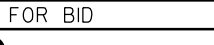


SECTION C-C
NOT TO SCALE

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PLOT DATE: 12/23/2022			8:46:00 AM		NOT FOR CONSTRUCTION			

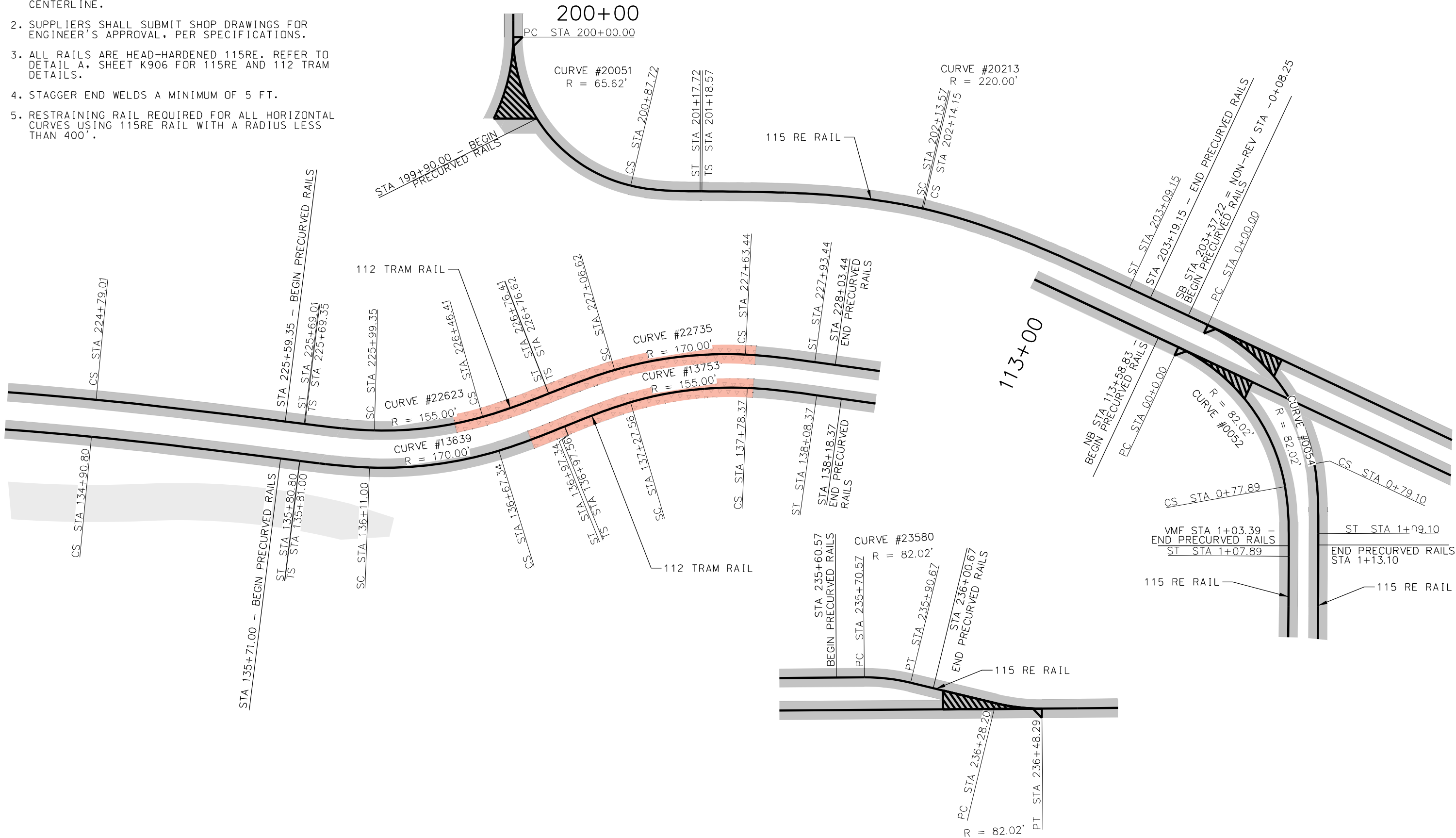




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PLOT DATE: 12/23/2022			8:46:13 AM			DATE	12-23-2022								
HORIZONTAL PRECURVED RAIL LOCATION MAP															
NOT FOR CONSTRUCTION															

NOTES:

1. CURVE GEOMETRY SHOWN IS FOR TRACK CENTERLINE.
2. SUPPLIERS SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S APPROVAL, PER SPECIFICATIONS.
3. ALL RAILS ARE HEAD-HARDENED 115RE. REFER TO DETAIL A, SHEET K906 FOR 115RE AND 112 TRAM DETAILS.
4. STAGGER END WELDS A MINIMUM OF 5 FT.
5. RESTRAINING RAIL REQUIRED FOR ALL HORIZONTAL CURVES USING 115RE RAIL WITH A RADIUS LESS THAN 400'.



REV	DATE	DESCRIPTION

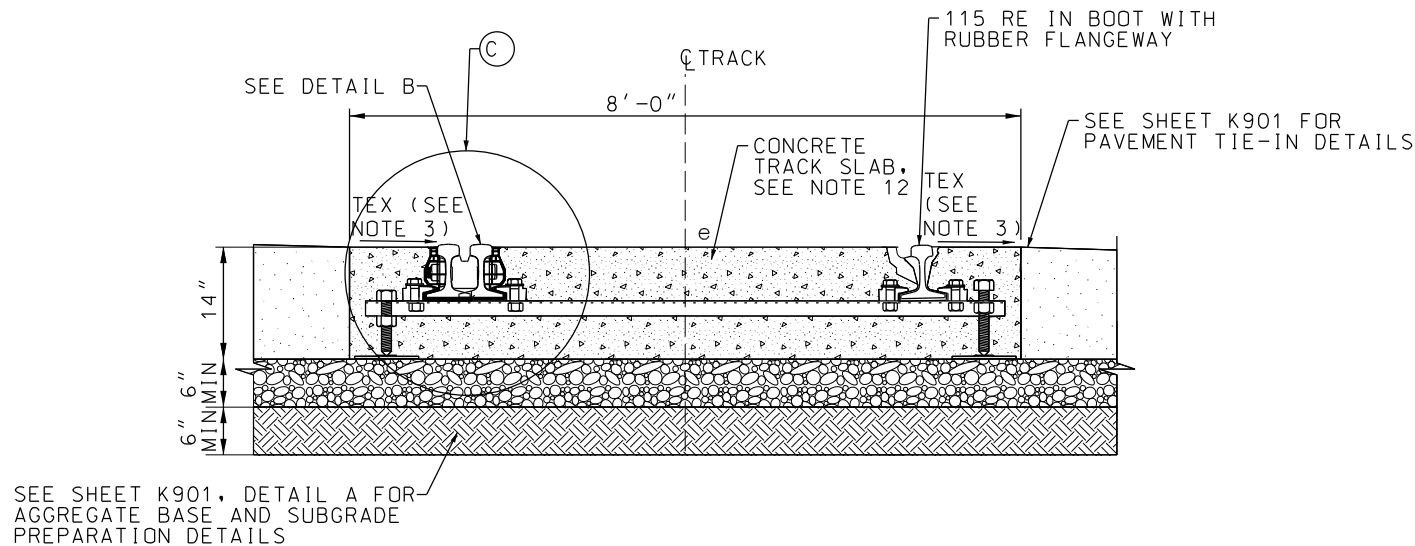
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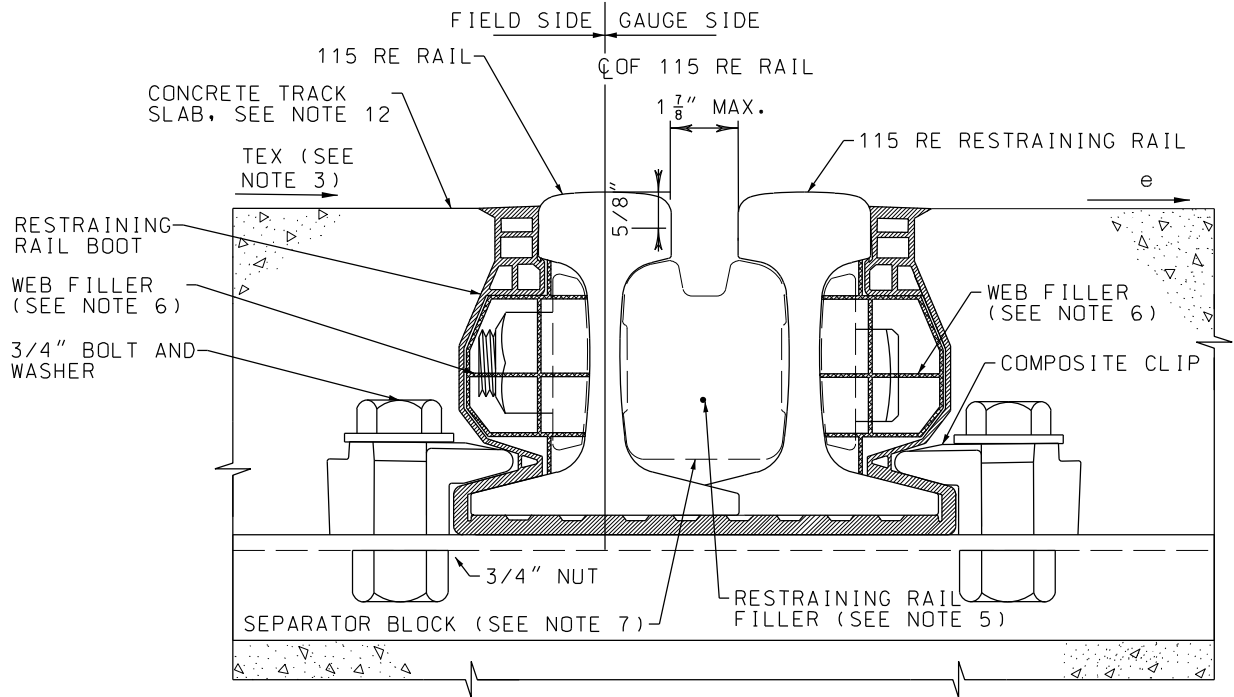
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HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION
HORIZONTAL PRECURVED RAIL DETAILS

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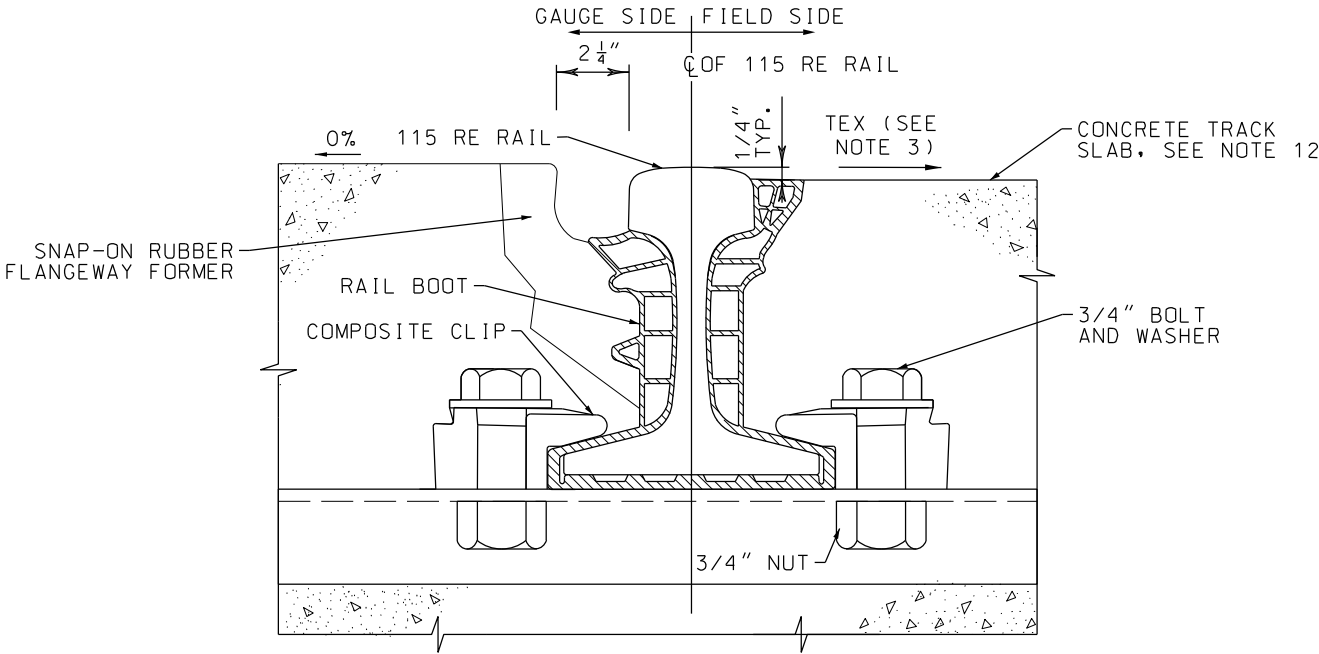
EMBEDDED TRACK WITH
RESTRAINING RAIL - CROSS SECTION (A)
NOT TO SCALE



RESTRAINING RAIL BOOT/TIE - EMBEDDED TRACK
ASSEMBLY AND FLANGEWAY DETAIL (B)
NOT TO SCALE

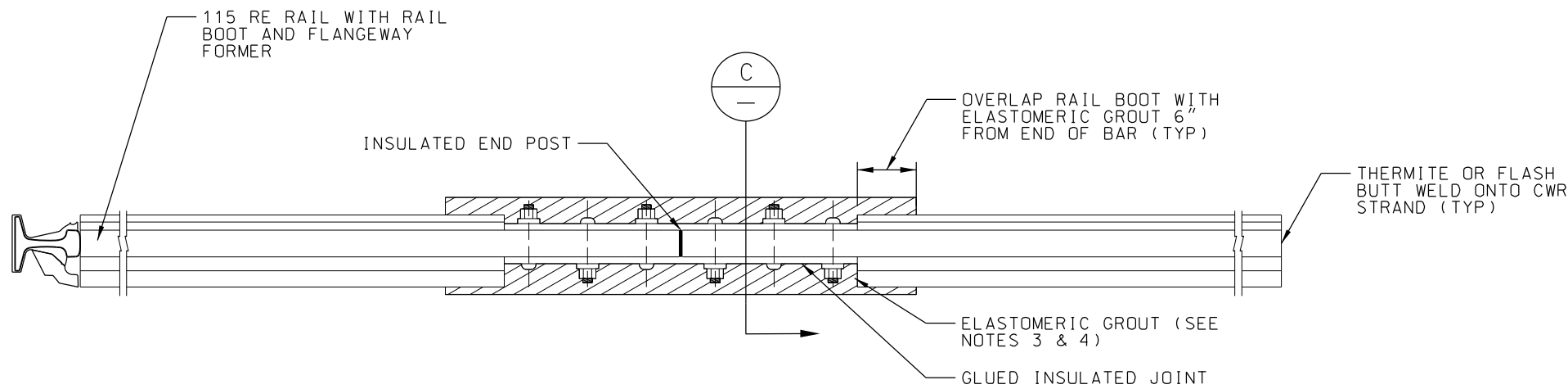
NOTES:

- PROPOSED PROFILE IS TOP OF LOW RAIL. NOTE THAT TOP OF CONCRETE BETWEEN RAILS IS 1/4" BELOW TOP OF RAIL.
- AVOID DAMAGING THE RAIL BOOT DURING STORAGE AND INSTALLATION. REPAIR ALL PUNCTURES, RIPS, TEARS AND GOUGES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS TO PREVENT STRAY CURRENT LEAKAGE.
- TRACK EDGE CROSS-SLOPE (TEX) ARE SHOWN ON K100 SERIES DRAWINGS AND SHALL BE FIELD ADJUSTED TO MINIMIZE ROADWAY REGRADE. COORDINATE WITH ENGINEER FOR APPROVAL. CROSS-SLOPES ADJACENT TO TRAVEL LANES NOT TO EXCEED 5%, OR 7% IN MIXED TRAFFIC LANES WHERE ADJACENT TO PARKING LANE OR CURB, WITHOUT APPROVAL OF ENGINEER. TEX NOT TO EXCEED 12% IN SEMI-EXCLUSIVE AND EXCLUSIVE GUIDEWAY.
- EMBEDDED RESTRAINING RAIL SHALL BE INSTALLED WITHOUT CANT
- BETWEEN SEPARATOR BLOCK ASSEMBLIES, SPACE BETWEEN RUNNING RAIL AND RESTRAINING RAIL SHALL BE FILLED WITH EITHER GUARD RAIL FILLER OR FLOWABLE FILL IN EMBEDDED TRACK ONLY, MAINTAINING A FLANGEWAY DEPTH OF 2 1/8" BELOW THE TOP OF RAIL.
- WEB FILLER REQUIRED ALONG BOTH SIDES OF RAIL BOOT ASSEMBLY BETWEEN LOCATIONS OF SEPARATOR BLOCK HEAD BOLTS.
- MAXIMUM SEPARATOR BLOCK SPACING 18" CENTER TO CENTER. SEPARATOR BLOCK MAY BE SOLID TYPE OR SPLIT TYPE.
- FIRST AND LAST 18" OF RESTRAINING RAIL FLANGEWAY TO BE FLARED TO 3 1/2".
- FOR TRACK SLAB DETAILS SEE SHEETS K901-K905.
- RESTRAINING RAIL TO BE INSTALLED ON THE INSIDE RUNNING RAIL FOR CURVES WITH 115 RE RAIL AND A RADIUS UNDER 400' AND SHALL EXTEND 10' BEYOND THE LIMITS OF THE CURVE OR AT THE SPIRAL TO TANGENT POINT PROVIDED THAT POINT IS AT LEAST 10 FEET BEYOND THE POINT ON THE SPIRAL WHERE THE INSTANTANEOUS RADIUS IS EQUAL TO 400'.
- FOR REVENUE SERVICE TRACK USING 115 RE RAIL, USE RESTRAINING RAIL ON BOTH RAILS FOR RADII UNDER 100'.
- ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY PER KCMO PUBLIC WORKS DEPARTMENT STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT. SEE SHEET K901 DETAIL A FOR TRACK SLAB REINFORCING AND SUBGRADE PREPARATION DETAILS

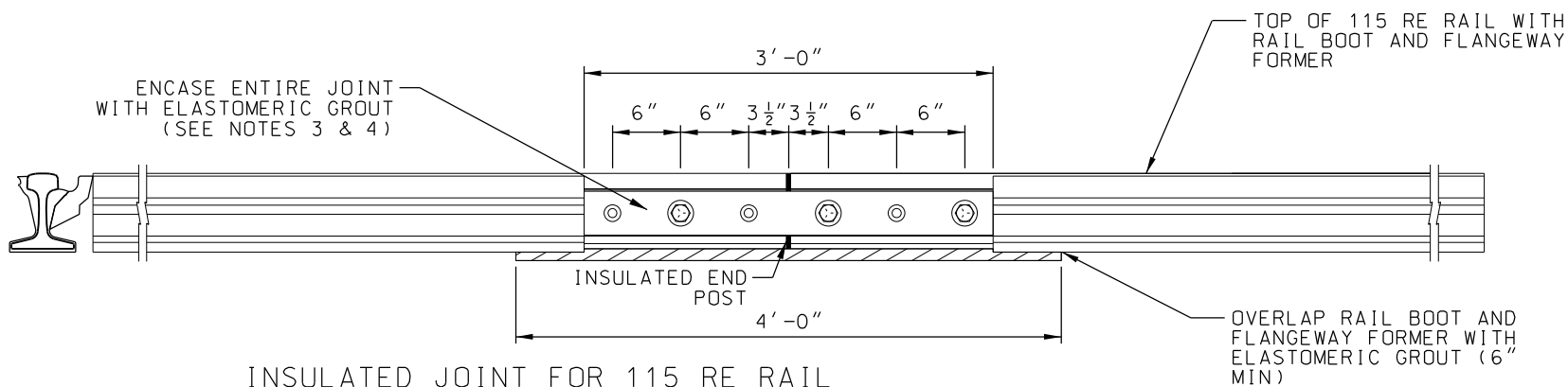


RAIL BOOT/TIE ASSEMBLY
AND FLANGEWAY DETAIL (C)
NOT TO SCALE

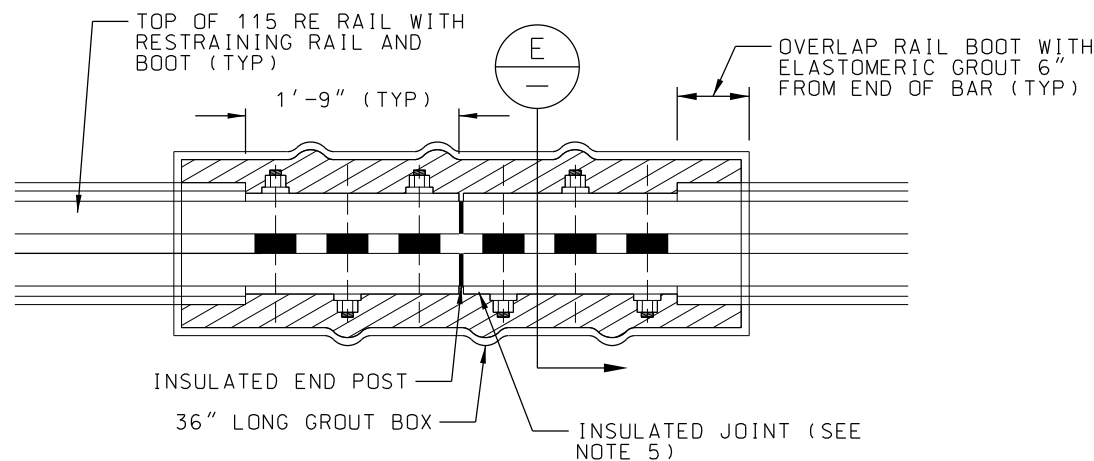
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PLOT DATE: 12/23/2022			8:46:25 AM		DATE	12-23-2022			K918	82	



INSULATED JOINT FOR 115 RE RAIL
PLAN VIEW
NOT TO SCALE



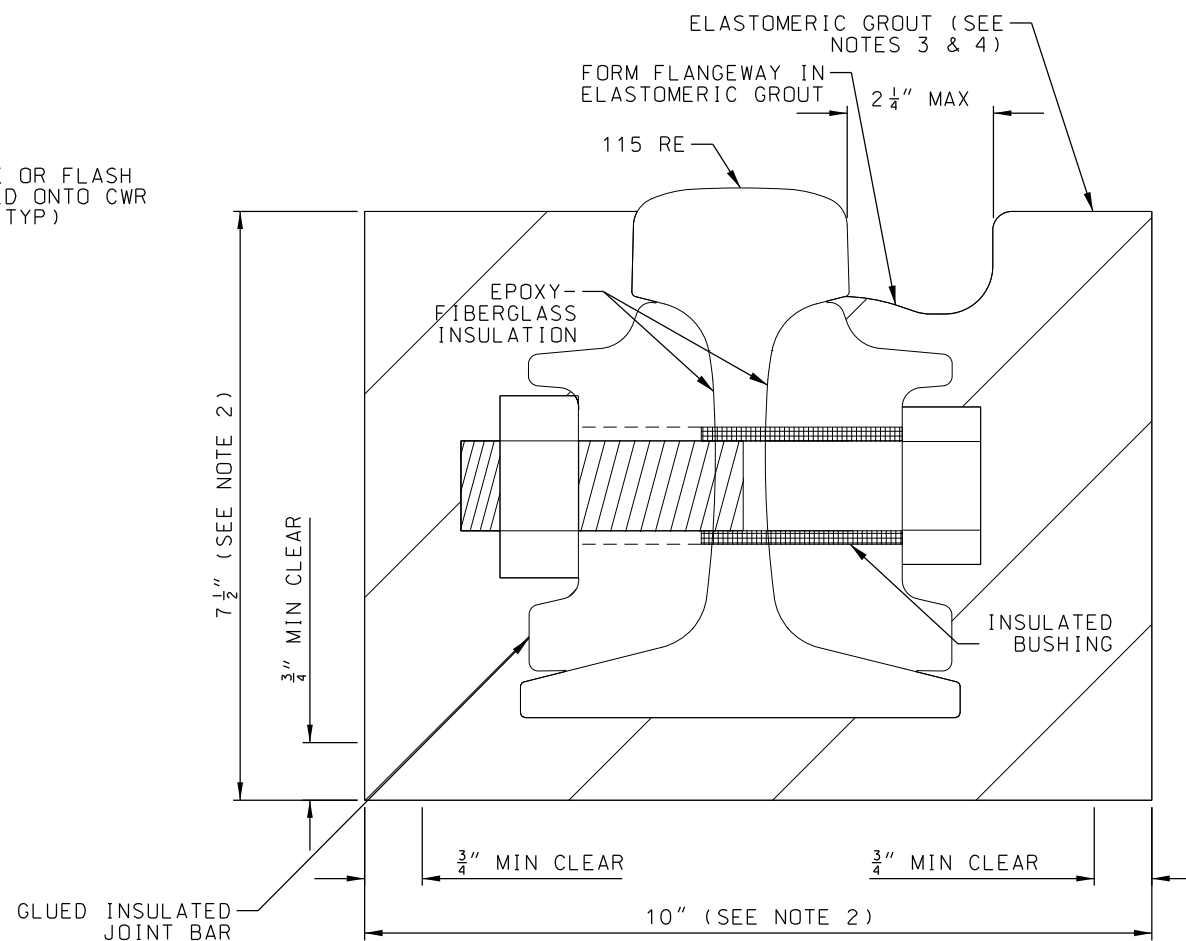
INSULATED JOINT FOR 115 RE RAIL
ELEVATION VIEW
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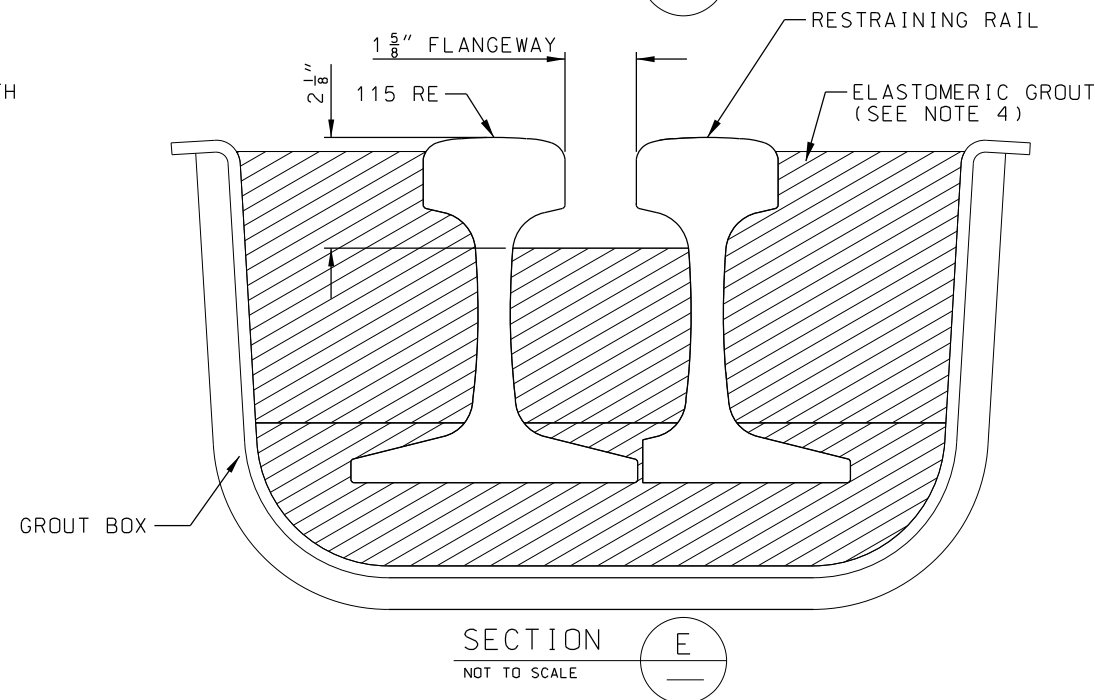
INSULATED JOINT FOR 115 RE
RESTRAINING RAIL IN TURNOUTS PLAN VIEW
NOT TO SCALE

NOTES:

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL BY ENGINEER PRIOR TO INSTALLATION.
2. DIMENSIONS AND MINIMUM CLEARANCES NOTED IN DETAIL ARE APPROXIMATE AND SHOULD BE UPDATED IN FINAL APPROVED SHOP DRAWINGS PRIOR TO INSTALLATION.
3. A MINIMUM OF 7" CONCRETE DEPTH REQUIRED BELOW ELASTOMERIC GROUT AND GROUT BOX.
4. ELASTOMERIC GROUT TO BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. INSTALL RESTRAINING RAIL INSULATED JOINTS PER SPECIAL TRACKWORK MANUFACTURER'S INSTALLATION INSTRUCTIONS.

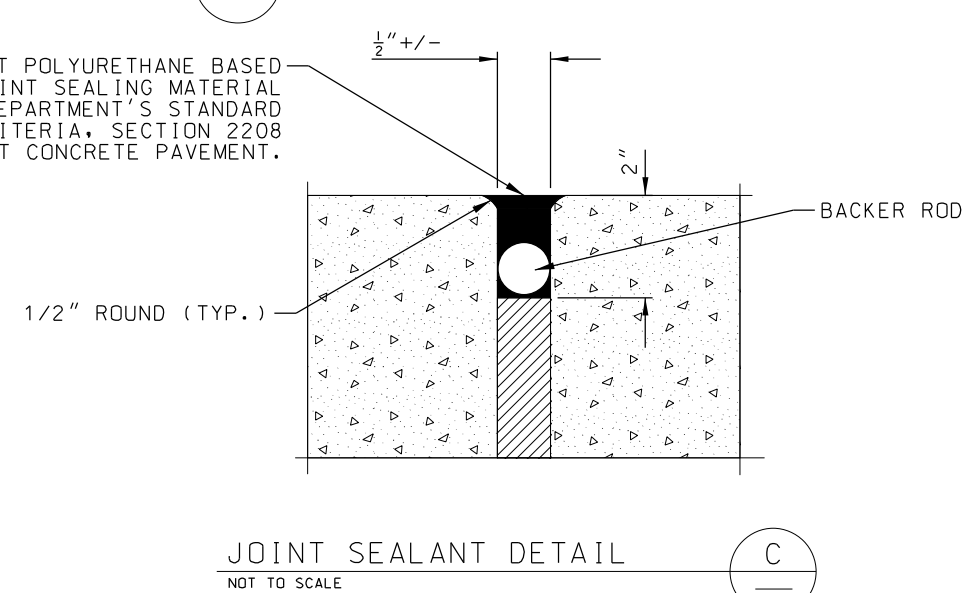
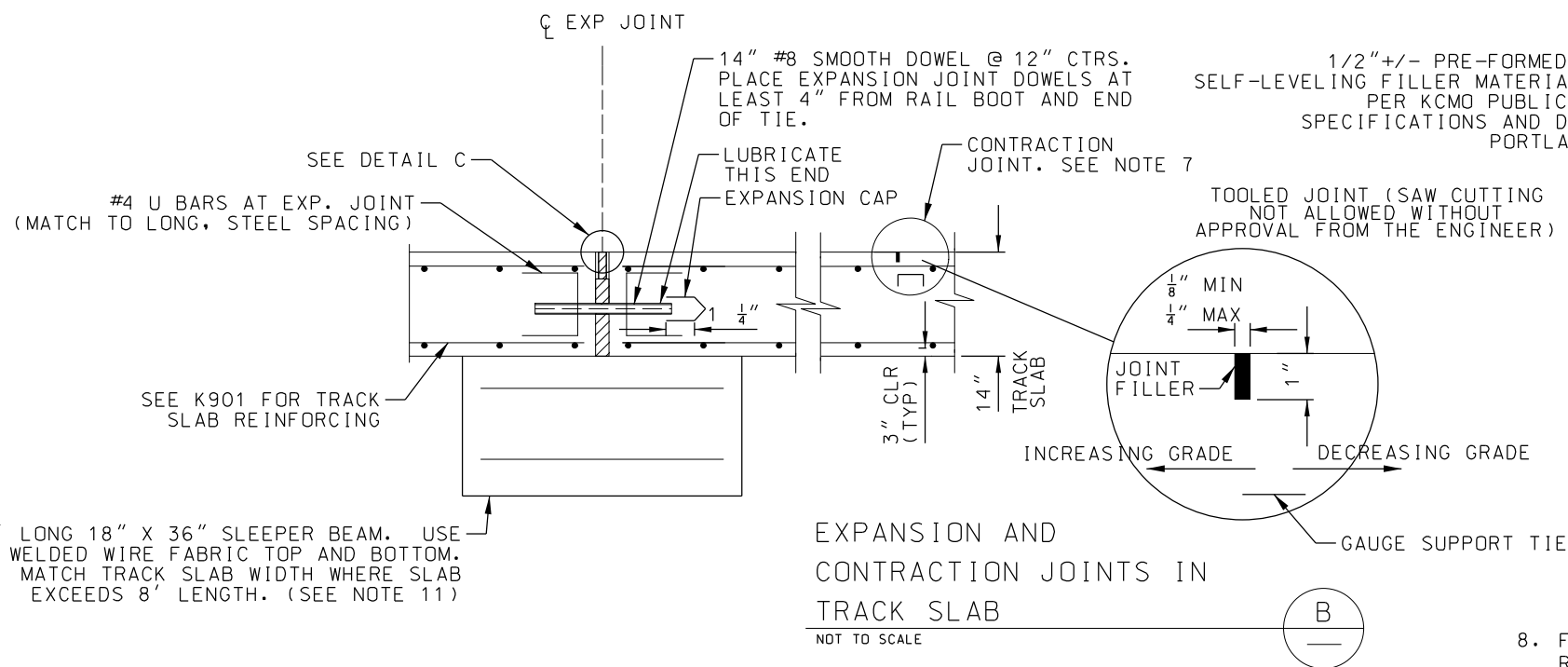
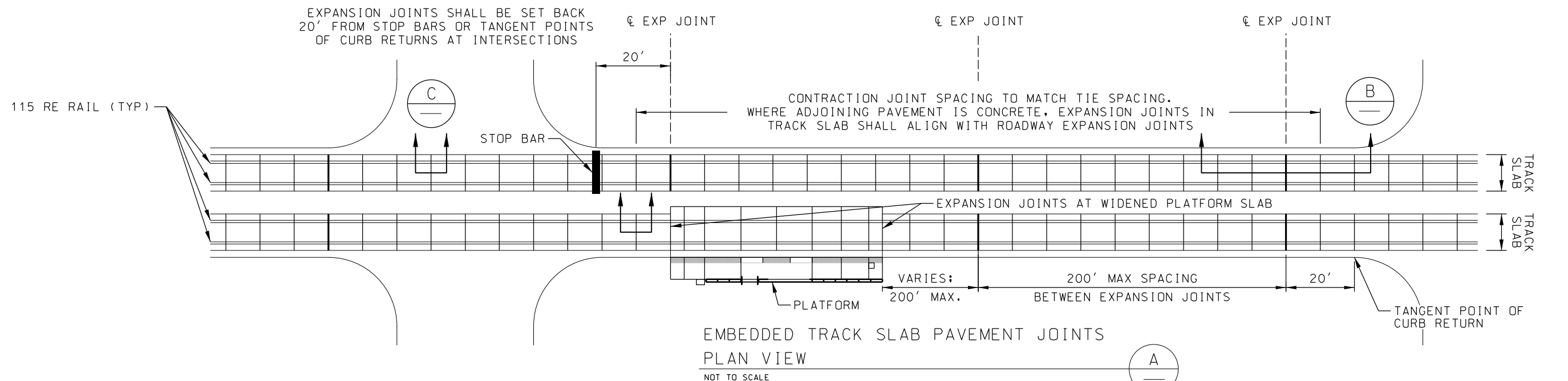


SECTION C
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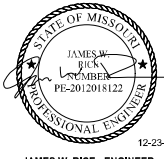
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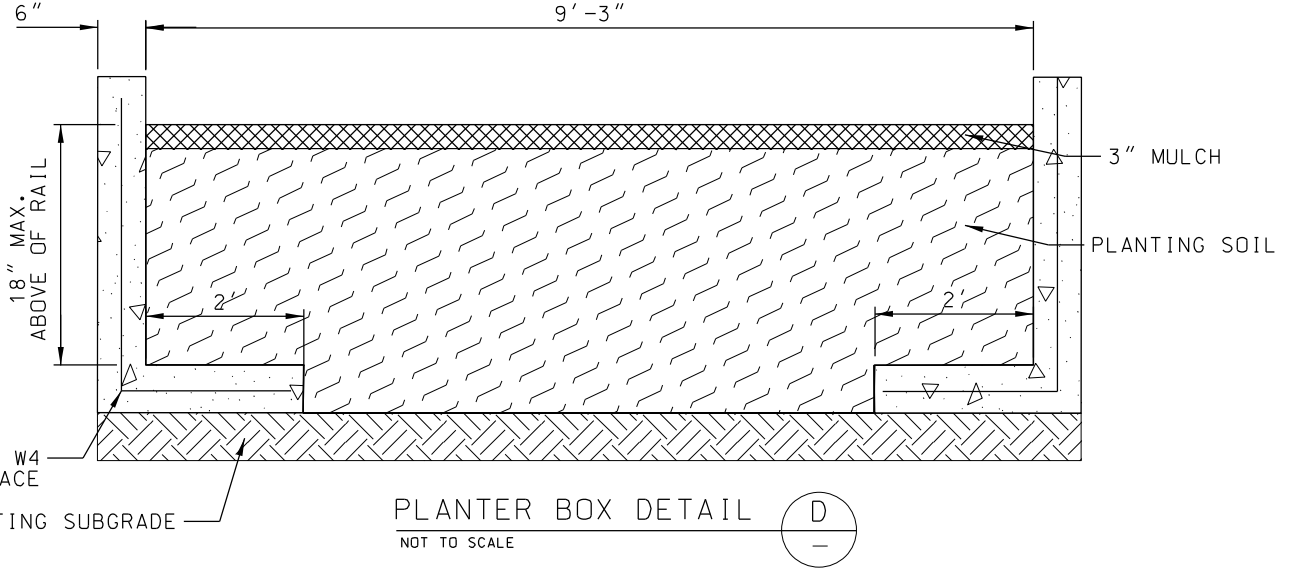
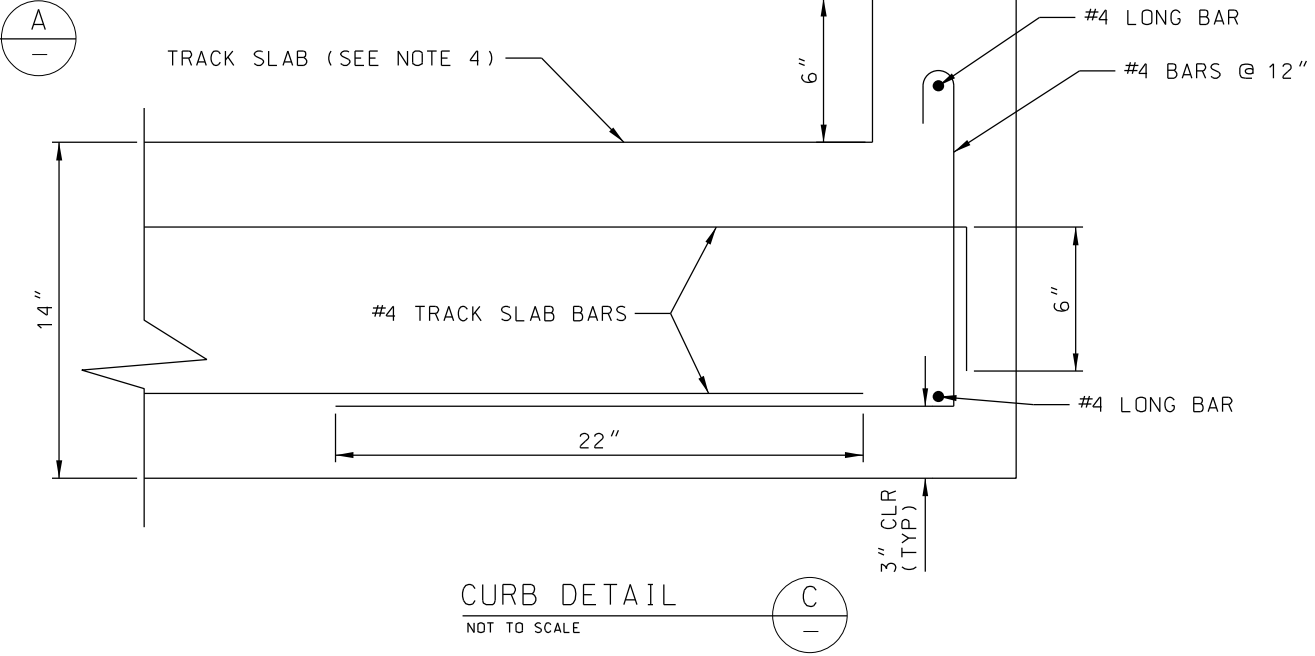
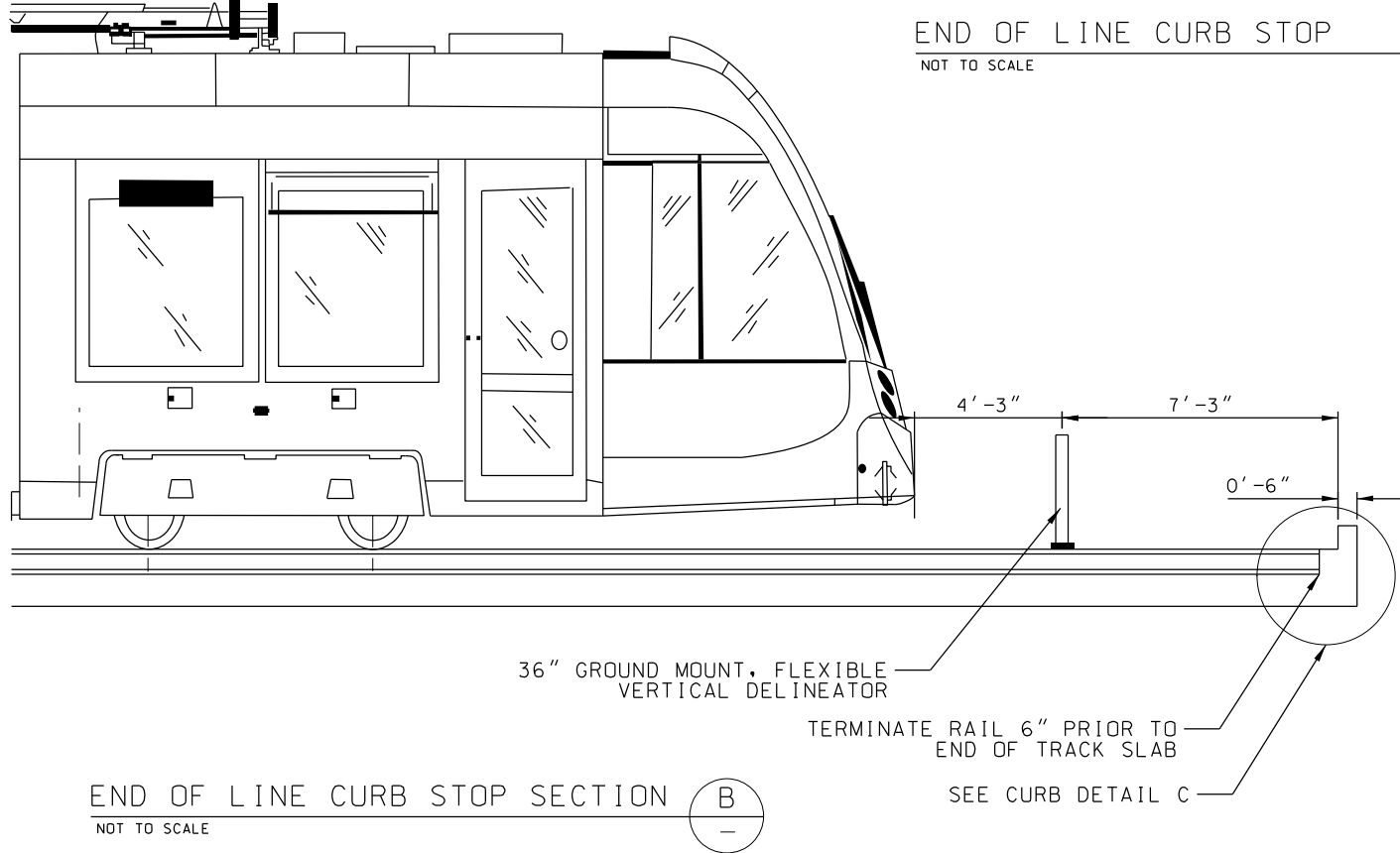
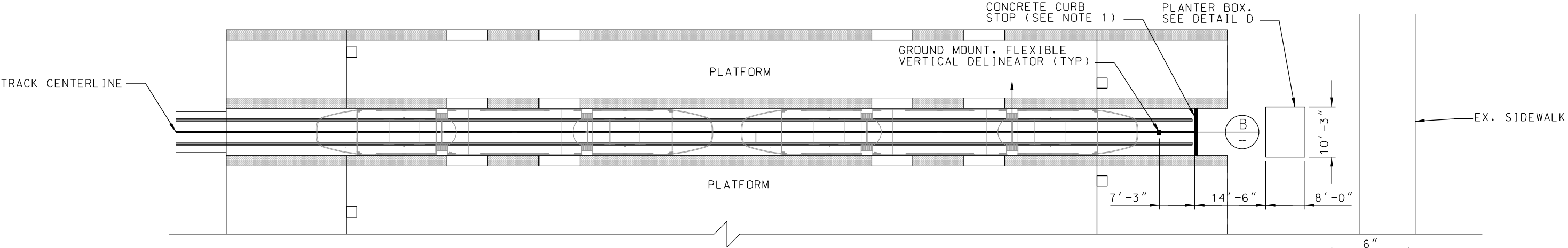
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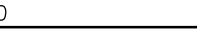
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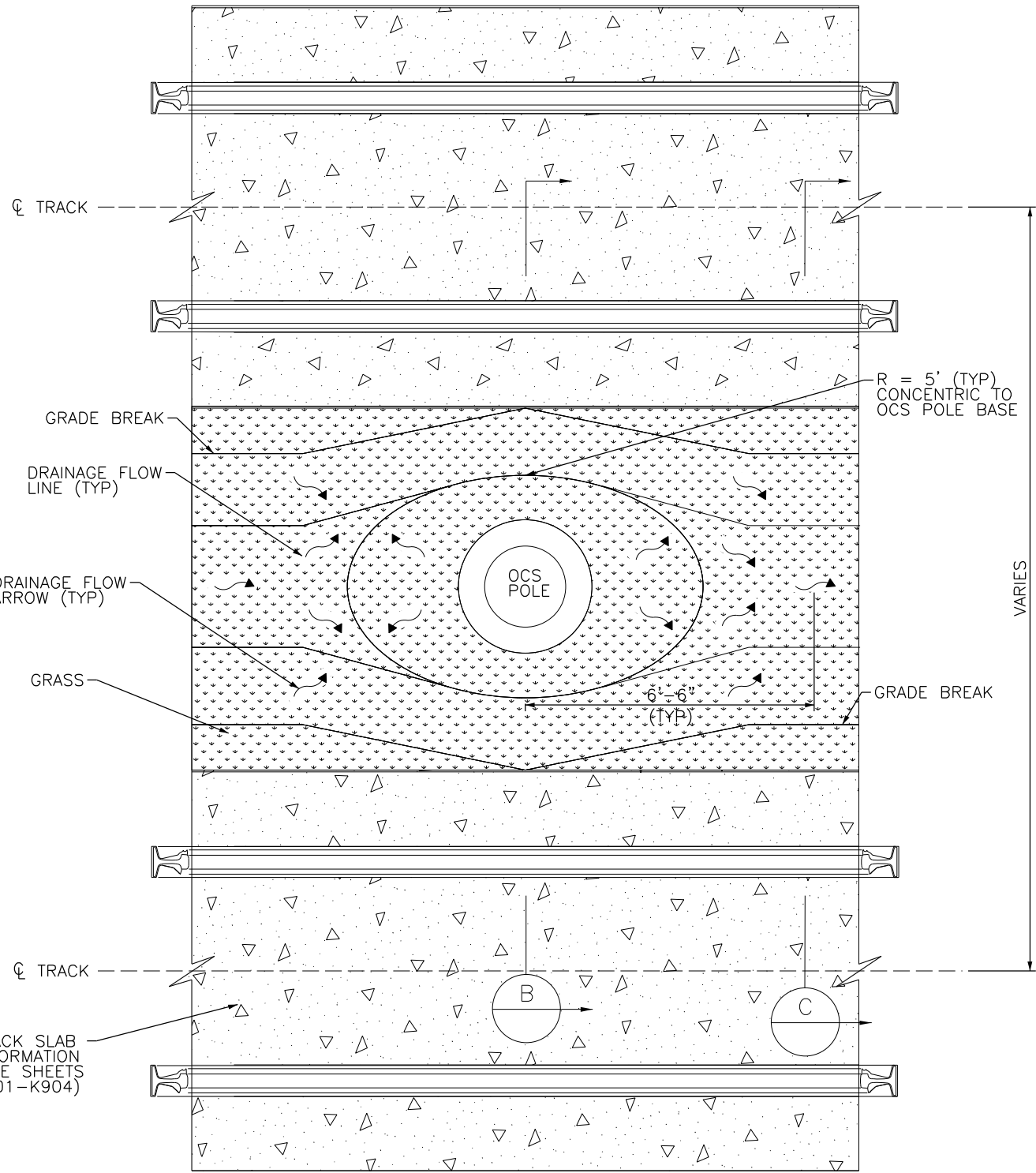
1. CONTRACTOR SHALL CONFIRM WITH RESIDENT ENGINEER ON PLACEMENT OF JOINTS PRIOR TO POURING SLAB. REFER TO KCMO STANDARD DRAWING J-1 FOR ADDITIONAL GUIDANCE.
2. CONTRACTOR SHALL AVOID MID-BLOCK DRIVEWAYS AND SUBMIT LOCATIONS TO ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.
3. TRACK SLAB EXPANSION JOINTS SHALL ALIGN WITH ROADWAY EXPANSION JOINTS WHEN ADJACENT PAVEMENT IS CONCRETE. SPACING SHOWN IS THE MAXIMUM ALLOWED.
4. DOWEL IS TO BE CENTERED IN SLAB. DOWELS SHALL BE SECURED PARALLEL TO THE TRACK SLAB SURFACE AND PERPENDICULAR TO THE JOINT.
5. CONCRETE SHALL NOT BE DISCHARGED FROM THE MIXER DIRECTLY ON TOP OF, OR ON THE SIDES OF THE JOINT ASSEMBLY.
6. CONTRACTION JOINTS SHALL BE TOOLED JOINTS.
7. CONTRACTION JOINT SHALL BE OVER THE UPHILL EDGE OF THE SUPPORT GAUGE TIE.
8. FORM A CONSTRUCTION JOINT (SIMILAR TO THE EXPANSION JOINT) AT THE END OF EACH DAY'S RUN OR WHEN AN INTERRUPTION LONG ENOUGH FOR THE CONCRETE TO DEVELOP ITS INITIAL SET OCCURS BY EITHER SETTING A HEADER BOARD TO SUPPORT DOWEL BARS, USING PRODUCTION QUALITY CONCRETE, HAND VIBRATED BEHIND THE HEAD BOARD, AND PROTECTING PROTRUDING STEEL FROM ANYTHING THAT MIGHT DAMAGE THE BARS OR WEAKEN THE BOND, OR SAWING BACK THE CONCRETE, THEN DRILL AND EPOXY IN DOWEL BARS.
9. EXPANSION JOINT TO BE INSTALLED AT BOTH ENDS OF WIDENED PLATFORM TRACK SLAB. SEE DETAIL C/K901, C/K903 AND PLAN SHEETS FOR LOCATIONS.
10. ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY PER KCMO PUBLIC WORKS DEPARTMENT STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT. SEE SHEET K901 DETAIL A FOR TRACK SLAB REINFORCING AND SUBGRADE PREPARATION DETAILS.
11. CONTRACTOR MAY SUBMIT PLAN TO USE PRECAST SLEEPER SLAB FOR ENGINEER APPROVAL.
12. FINAL JOINT SIZE AND MATERIAL TO BE ADDED AFTER 28 DAYS OF CURE.

REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: K920.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: K920 84				
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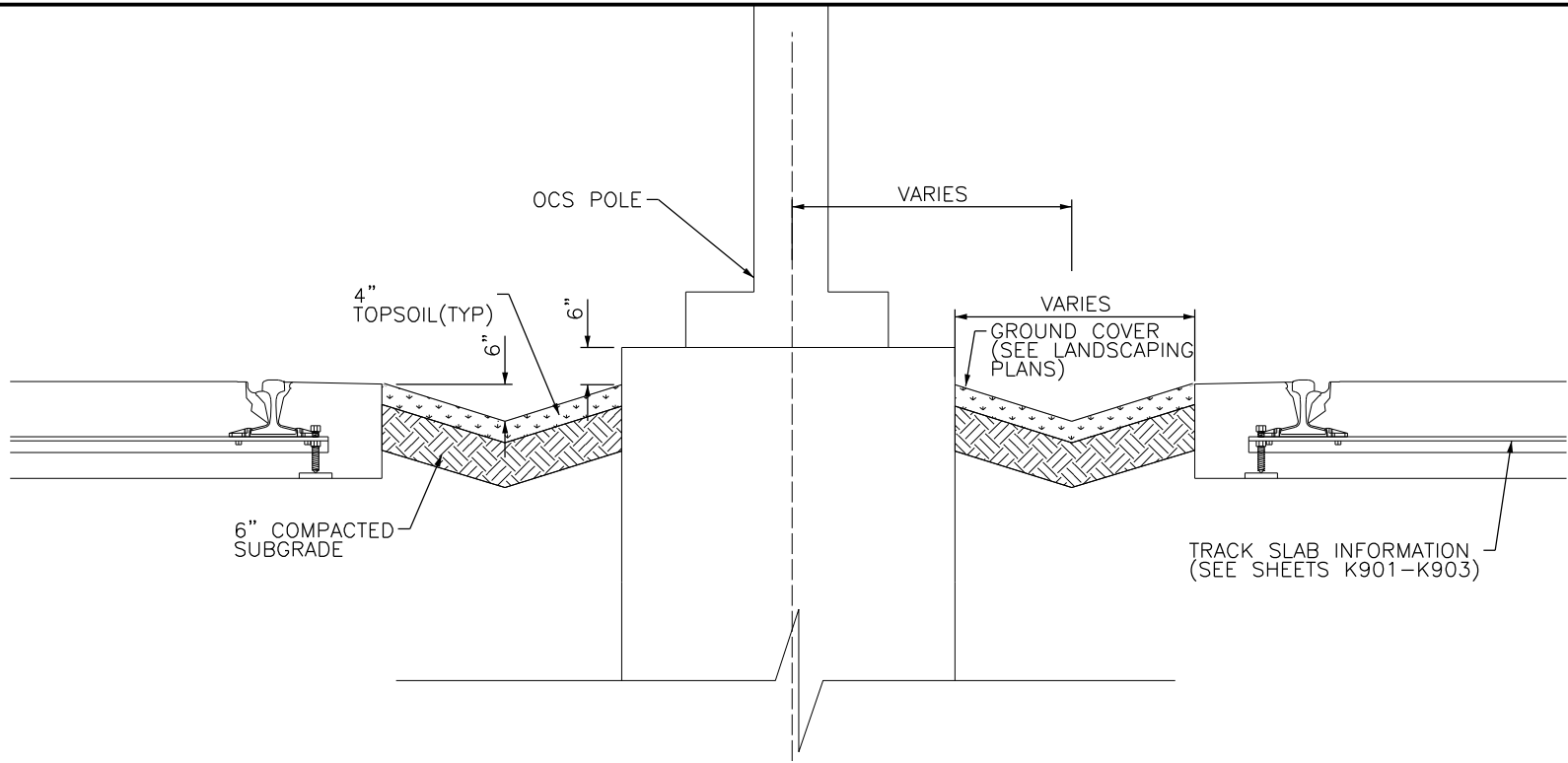
- NOTES:
- 1. END OF LINE CURB STOP IS 8' WIDE, CENTERED ON TRACK CENTERLINE.
 - 2. SEE SHEET K111 FOR TRACK GEOMETRY DETAILS.
 - 3. SEE SHEETS K901-K905 FOR TRACK SLAB DETAILS.
 - 4. ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH NON-METALLIC MICROFIBER DOSING, 3 LB PER CY PER KCMO PUBLIC WORKS DEPARTMENT STANDARD SPECIFICATIONS AND DESIGN CRITERIA, SECTION 2208 PORTLAND CEMENT CONCRETE PAVEMENT. SEE SHEET K901 DETAIL A FOR TRACK SLAB REINFORCING AND SUBGRADE PREPARATION DETAILS.

<table><tr><th>REV</th><th>DATE</th><th>DESCRIPTION</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>			REV	DATE	DESCRIPTION																DESIGNED BY MMO	 	ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE	
REV	DATE	DESCRIPTION																											
			CHECKED BY JWR		10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		END OF LINE CURB STOP		FILENAME: K921.dgn																				
			DRAWN BY MMO				CONTRACT NO.:																						
			CHECKED BY JWR				CONTRACT NO. ***																						
			APPROVED BY NKS				VOLUME:																						
							DRAWING NO.:																						
PLOT DATE: 12/23/2022			DATE 12-23-2022	JAMES W. RICE - ENGINEER LICENSE NO. 2012018122		NOT FOR CONSTRUCTION		K921		SHEET NO.: 85																			

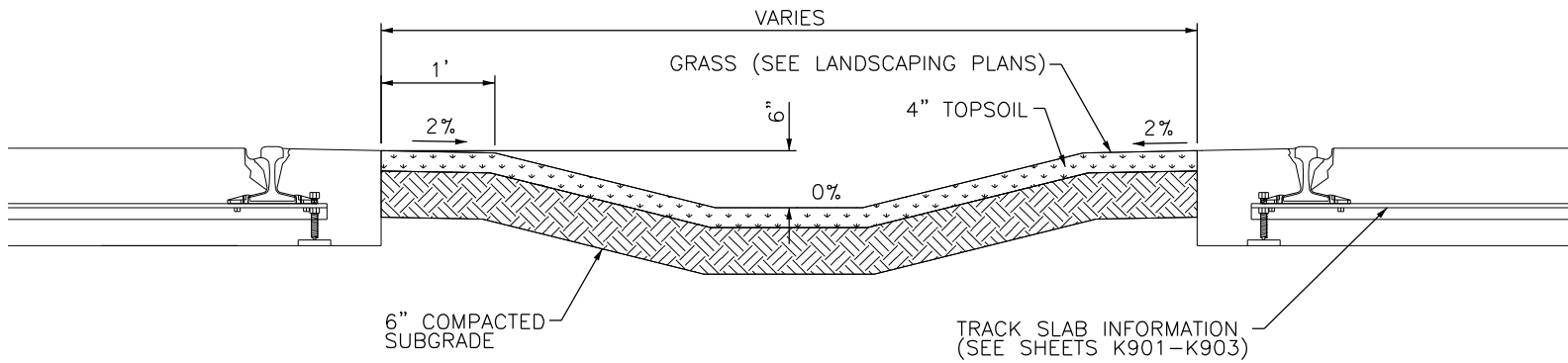


TYPICAL INFILL GRASS GRADING
NOT TO SCALE

NOTE: PLAN VIEW SHOWN ASSUMES TRACK GRADE FALLING LEFT TO RIGHT.



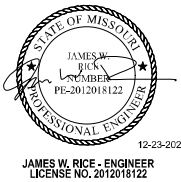
TYPICAL INFILL GRASS SECTION @ OCS POLE
NOT TO SCALE



TYPICAL INFILL GRASS SECTION
NOT TO SCALE

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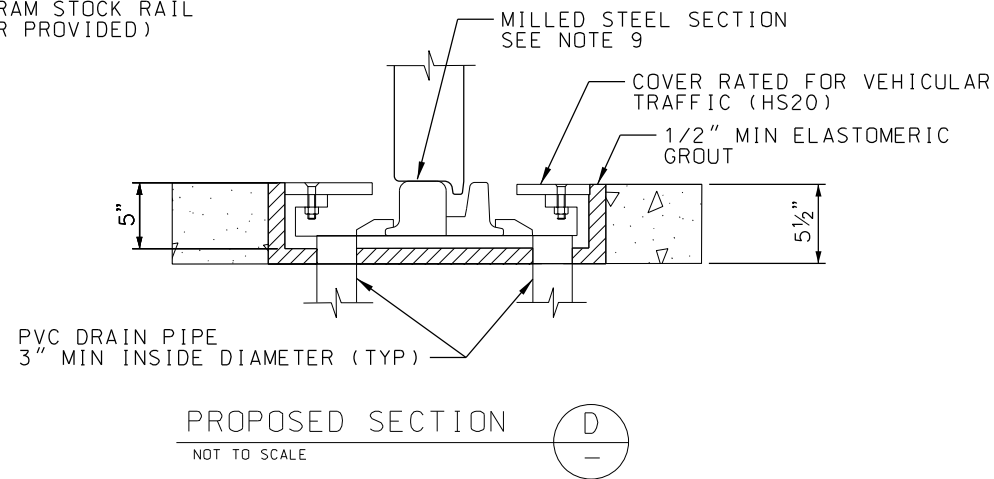
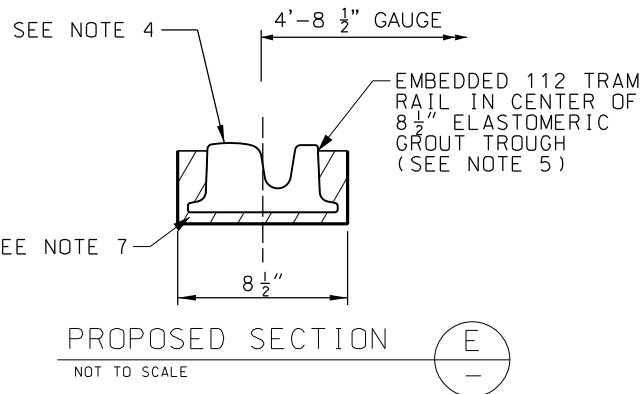
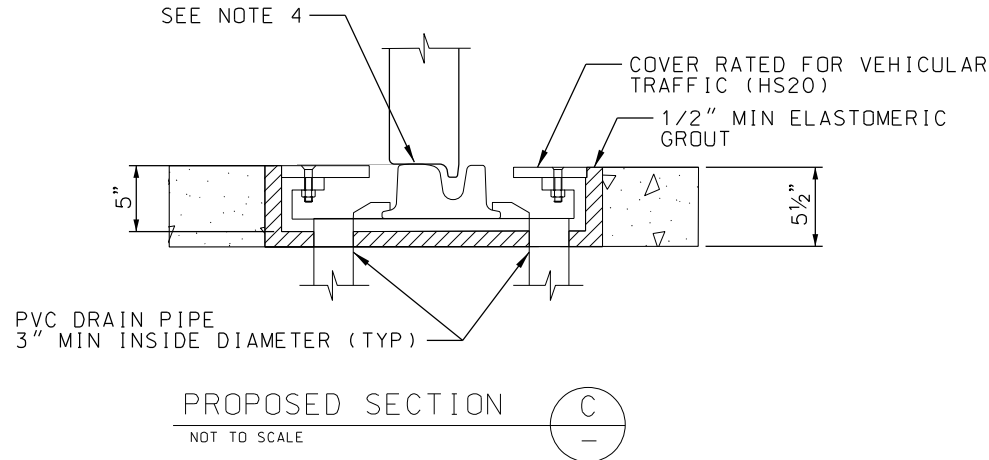
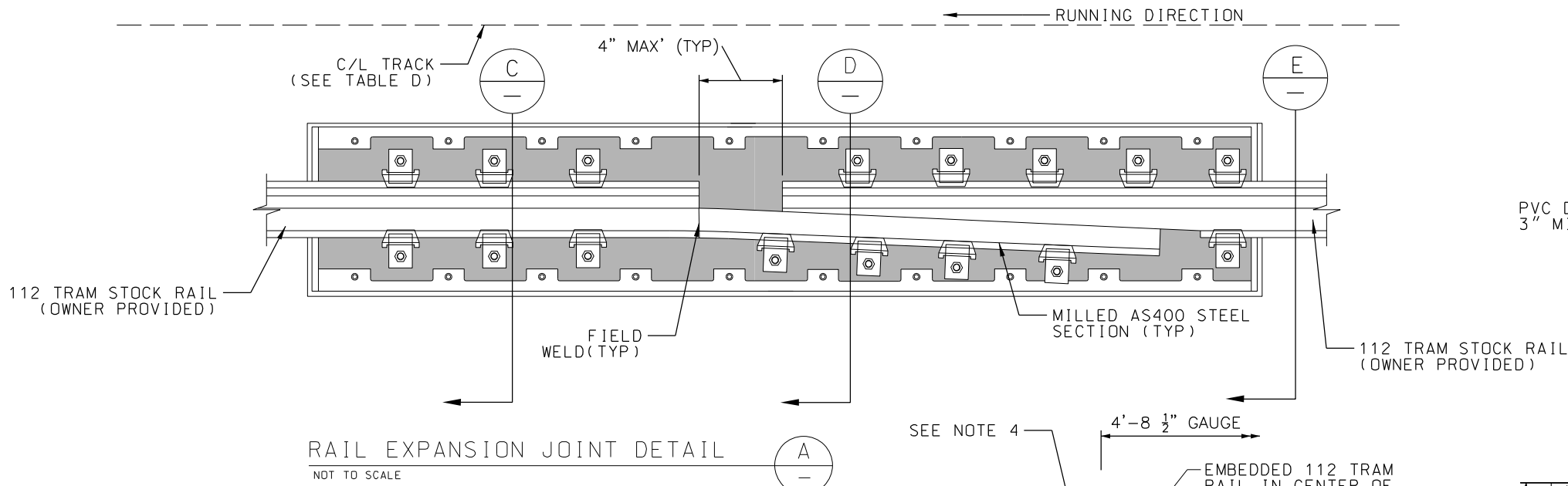
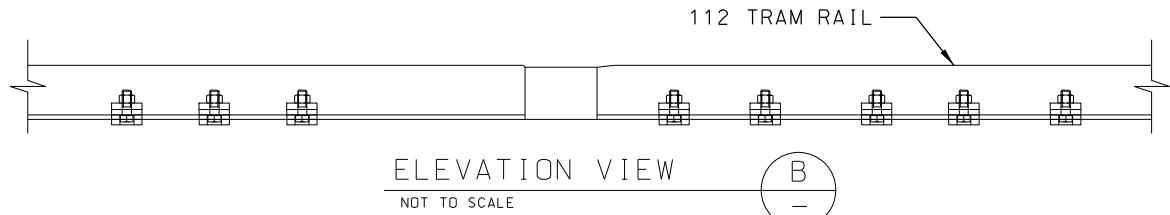
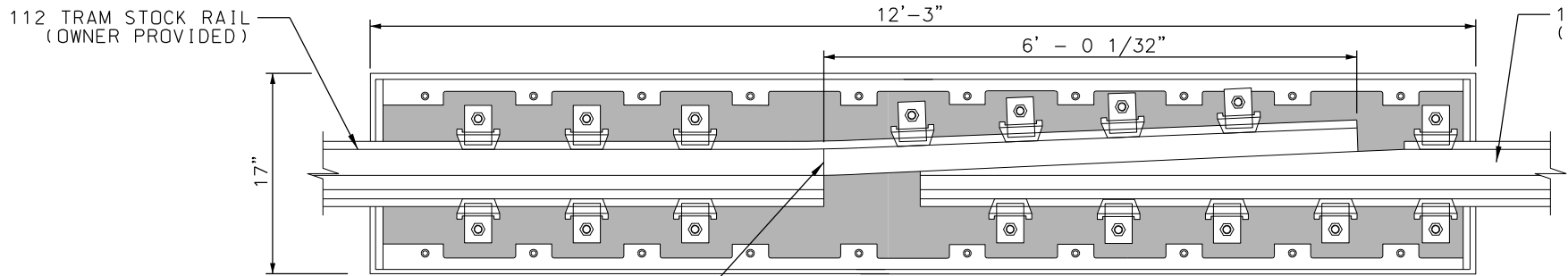
DESIGNED BY	MMO
CHECKED BY	JWR
DRAWN BY	MMO
CHECKED BY	JWR
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
TRACK SLAB INFILL GRADING DETAILS	

SCALE FOR 22"x34": NOT TO SCALE
FILENAME: K922.dgn
CONTRACT NO.: ***
VOLUME: 1
DRAWING NO.: K922
SHEET NO.: 86



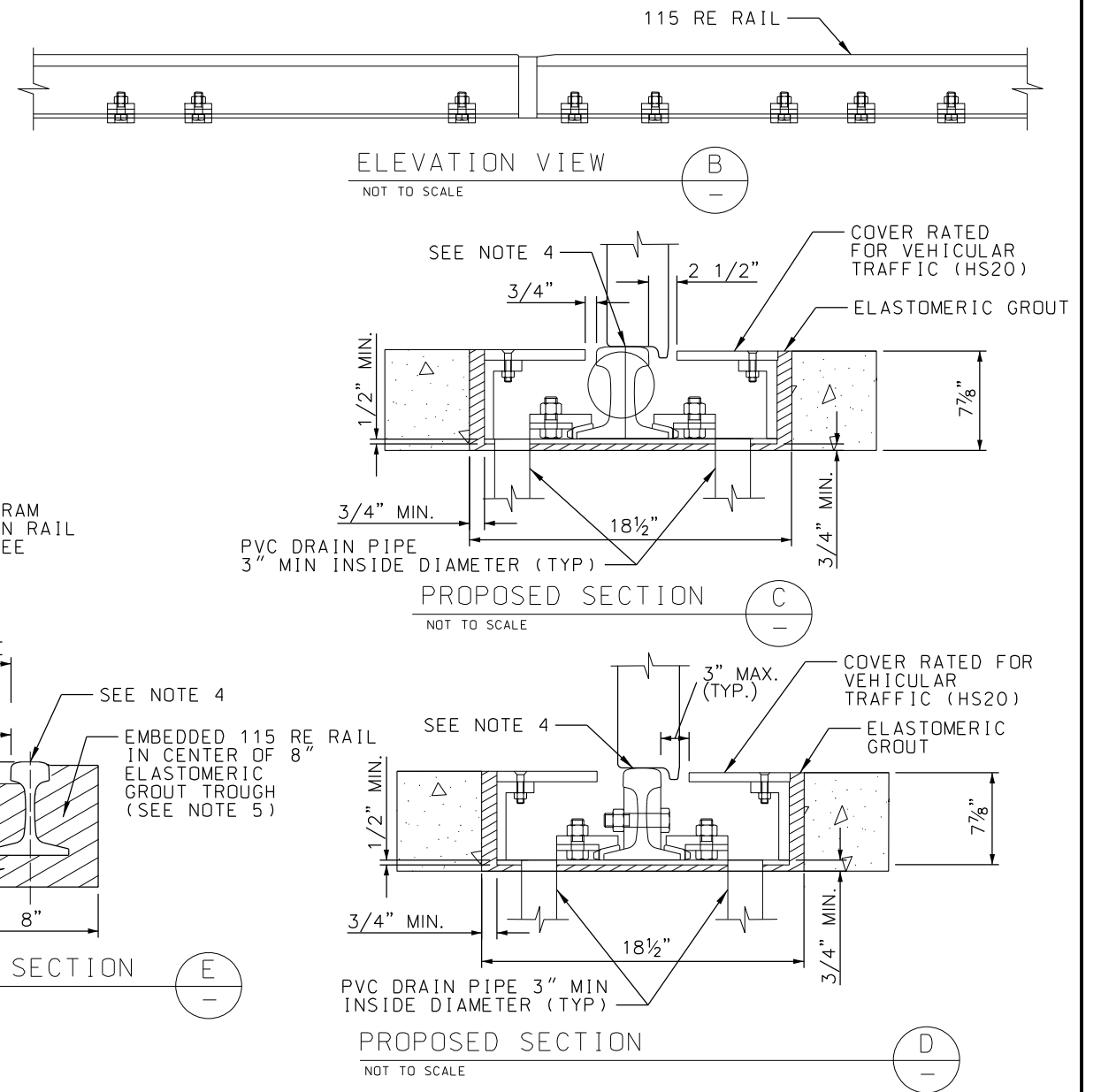
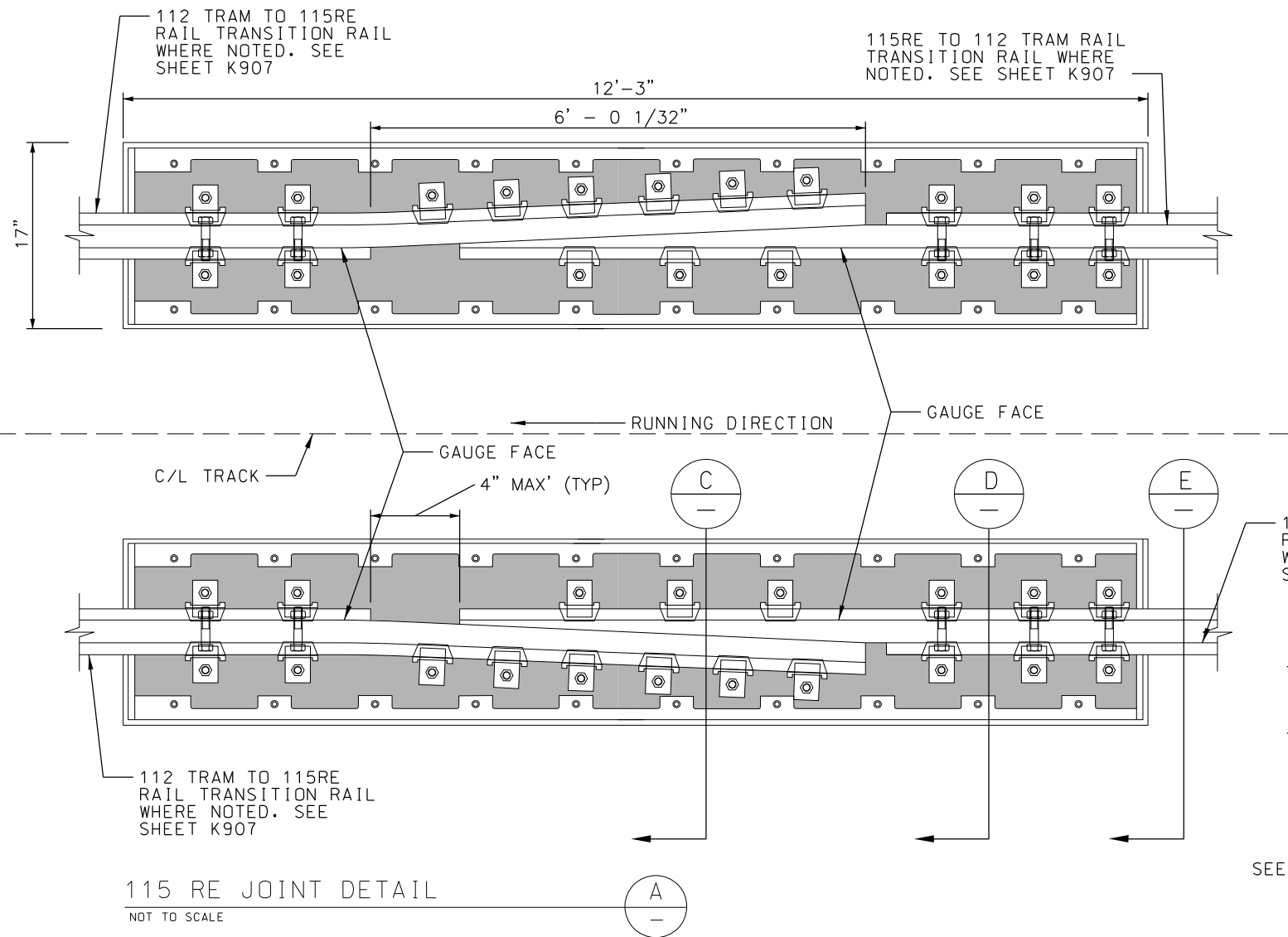
- NOTES:
- JOINT SHOWN IS PROVIDED AS BASIS OF DESIGN. VENDOR SHALL SUBMIT JOINT MEETING THE PARAMETERS SHOWN HERE AND IN SPECIFICATIONS OR APPROVED EQUAL.
 - REFER TO K103 TO K106 FOR ADDITIONAL INFORMATION. FIELD VERIFY FOR ALL SIZE AND SHAPE LIMITATIONS.
 - FABRICATOR SHALL SUPPLY SHOP DRAWING FOR APPROVAL THAT MEET DIMENSIONS AND DETAILS SHOWN ON THIS PLAN.
 - CONTRACTOR TO INSTALL PROPOSED TOP OF RAIL 1/4" ABOVE ADJACENT BRIDGE DECK.
 - CONTRACTOR TO SUBMIT INSTALLATION PLAN FOR HOLDING GAUGE IN ELASTOMERIC GROUT TROUGH TO ENGINEER FOR REVIEW AND APPROVAL.
 - JOINT SHALL ALLOW FOR OPERATING SPEEDS UP TO 35 MPH.
 - MINIMUM THICKNESS GROUT BELOW RAIL SHALL BE 1".
 - EXPANSION JOINTS SHALL BE BONDED WITHIN THE BOX FOR CONTINUITY OF NEGATIVE RETURN CURRENT AND TRACK CIRCUIT.
 - STEEL FOR MILLED SECTION SHALL MEET OR EXCEED THE REQUIREMENTS OUTLINED IN SPECIFICATION SECTION 34 11 00, INCLUDING A MINIMUM HARDNESS OF 350 BHN.

LOCATION	MAX CONTRACTION	MAX EXPANSION	TOTAL MOVEMENT	NB RADIUS	SB RADIUS
	INCHES	INCHES	INCHES	FEET	FEET
ABUTMENT 1 APPROACH SLAB	0.92	0.36	1.28	TANGENT	TANGENT
PIER 2	1.68	1.20	2.88	1600	1616
PIER 5	2.28	1.44	3.72	1600	1616
PIER 8	2.38	1.41	3.79	1600	1616
PIER 11	0.79	0.51	1.30	1600	1616
PIER 12	1.48	1.02	2.50	1600	1616
ABUTMENT 2 APPROACH SLAB	1.57	0.67	2.24	1600	1616

MOVEMENT AND RADIUS AT RAIL EXPANSION JOINTS



REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: K923.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: K923 87
			CHECKED BY	JWR				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		
			DRAWN BY	MMO						
			CHECKED BY	JWR						
			APPROVED BY	NKS						
PLOT DATE: 12/23/2022 3:03:52 PM			DATE	12-23-2022	NOT FOR CONSTRUCTION					



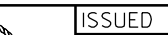
NOTES:

- JOINT SHOWN IS PROVIDED AS BASIS OF DESIGN. VENDOR SHALL SUBMIT JOINT MEETING THE PARAMETERS SHOWN HERE AND IN SPECIFICATIONS OR APPROVED EQUAL.
- REFER TO K103 TO K106 FOR ADDITIONAL INFORMATION. FIELD VERIFY FOR ALL SIZE AND SHAPE LIMITATIONS.
- FABRICATOR SHALL SUPPLY SHOP DRAWING FOR APPROVAL THAT MEET DIMENSIONS AND DETAILS SHOWN ON THIS PLAN.
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- CONTRACTOR TO SUBMIT INSTALLATION PLAN FOR HOLDING GAUGE IN ELASTOMERIC GROUT TROUGH TO ENGINEER FOR REVIEW AND APPROVAL.
- JOINT SHALL ALLOW FOR OPERATING SPEEDS UP TO 35 MPH.
- MINIMUM THICKNESS GROUT BELOW RAIL SHALL BE 1".
- EXPANSION JOINTS SHALL BE BONDED WITHIN THE BOX FOR CONTINUITY OF NEGATIVE RETURN CURRENT AND TRACK CIRCUIT

LOCATION	MAX CONTRACTION	MAX EXPANSION	TOTAL MOVEMENT	NB RADIUS	SB RADIUS
	INCHES	INCHES	INCHES	FEET	FEET
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PIER 11	0.79	0.51	1.30	1600	1616
PIER 12	1.48	1.02	2.50	1600	1616
ABUTMENT 2 APPROACH SLAB	1.57	0.67	2.24	1600	1616

MOVEMENT AND RADIUS AT RAIL EXPANSION JOINTS



REV	DATE	DESCRIPTION	DESIGNED BY	CRR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	115 RE RAIL EXPANSION JOINTS	SCALE FOR 22"x34": NOT TO SCALE	
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PLOT DATE: 12/23/2022			8:46:40 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:		
									K923A	88		



TURNOUT #	TRACK ALIGNMENT	PSW		POF	
		STATION	ELEVATION	STATION	ELEVATION
493	SB NON-REV	4+93.31	791.90	5+03.40	791.88
1064	VMF TRACK 1	10+64.21	791.79	10+54.13	791.81

* ALL STATIONS BASED ON
CENTERLINE ALIGNMENT AND
ALL ELEVATIONS BASED ON
TOP OF RAIL PROFILE AT
CENTERLINE

MANUAL NO 4 STRAIGHT FROG
EMBEDDED TURNOUT WITH
RIGHT-HAND 25M FLEXIVE
TONGUE SWITCH.

SWITCH BOX

$$7' - 7''$$

4" TURNOUT DRAIN

FLARED GUARD RAIL
(TYP)

POINT-OF-SWITCH
NB NON-REV STA.
10+64.21 = NON-H
CROSSOVER STA

10+97.4

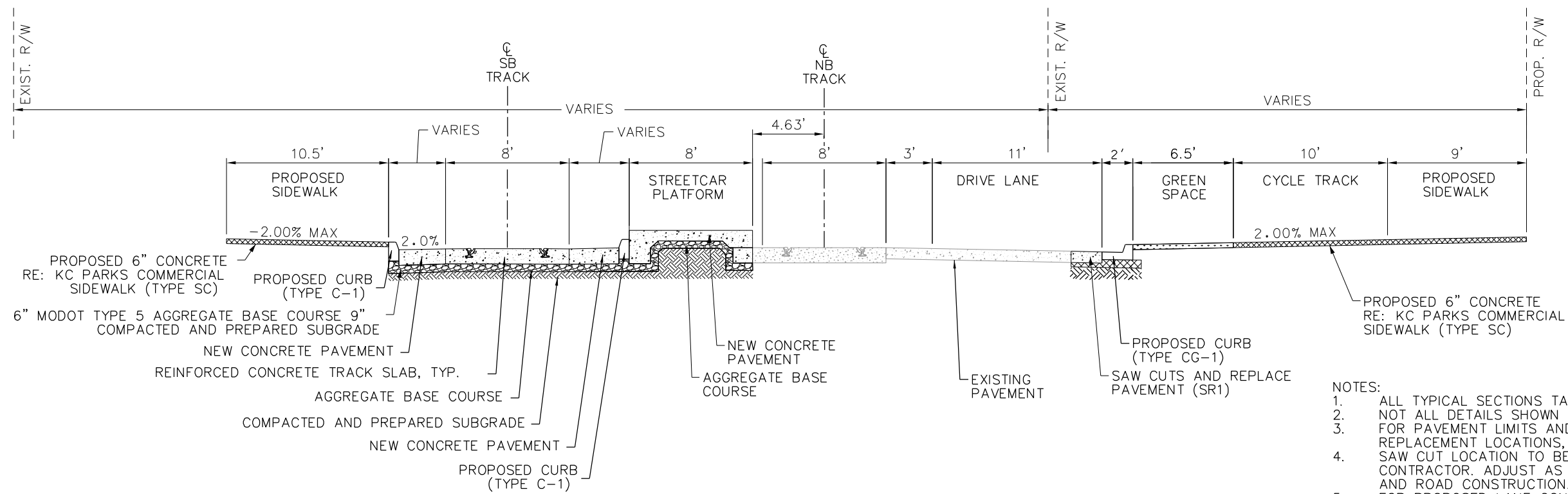
' -3 '

NOT TO SCALE

NOTES:

1. THE SWITCH SHALL BE MANUAL AND SHALL BE ABLE TO ACCOMMODATE A POWER SWITCH MACHINE. SWITCH MECHANISM AND EARTH BOX SHALL BE INSULATED FOR SIGNALING CIRCUITS. THE SWITCH CONSISTS OF DOUBLE TONGUE 115RE SAMPSON SWITCH POINTS FOR NO. 4 TURNOUTS.
2. ALL JOINTS AND CONNECTIONS TO BE FIELD WELDED UNLESS NOTED OTHERWISE.
3. ALL DIMENSIONS ARE IN FEET AND INCHES.
4. TURNOUT TO BE FULLY INSULATED FOR ELECTRICAL ISOLATION PROVIDED THROUGH ENCAPSULATION PER MANUFACTURER AND MATERIAL SUPPLIER SPECIFICATIONS AND APPROVED BY ENGINEER. ISOLATION SHALL SATISFY RESISTIVITY REQUIREMENTS PER SPECIFICATIONS.
5. SWITCH MACHINE SHALL BE CENTERED BETWEEN TONGUE SWITCHES AFTER GEOMETRY DIMENSIONS AND TOLERANCES HAVE BEEN SATISFIED.
6. ALL GAUGE RODS SHALL BE DRILLED AND SECURED TO TURNOUT AFTER GEOMETRY DIMENSIONS AND TOLERANCES HAVE BEEN SATISFIED.
7. TURNOUT DRAINS TO BE CONNECTED TO OVERALL DRAINAGE NETWORK. PROVIDE POWERED CONNECTIONS FOR SWITCH HEATERS AND POWER SWITCHES. PROVIDE DRAINAGE CONNECTION FOR SWITCH DRAIN AND TURNOUT DRAINS (LOCATION AND ROUTING TO BE DETERMINED WITH APPROVED SHOP DRAWINGS). SWITCH DRAIN TO BE PVC WITH RUBBER TIGHT GASKET.
8. EARTHBOX MACHINE AND SWITCH HEATER BOXES SHALL BE DESIGNED FOR HS20 LOADING. REFER TO SYSTEMS PLANS SHEET Z602 FOR SWITCH HEATER DETAILS.
9. RIGHT-HAND TURNOUT SHOWN, LEFT-HAND IS MIRROR IMAGE.
10. FROG SHALL BE A FLANGE-BEARING WELDED BOLTLESS MANGANESE FROG IN ACCORDANCE WITH THE SPECIFICATIONS.
11. SEE TRAIN CONTROL DRAWINGS FOR INSULATED JOINT LOCATION AND LAYOUT.
12. CROSSOVER MANUFACTURING AND ENCAPSULATION SHALL BE IN COMPLIANCE WITH BUY AMERICA REQUIREMENTS.
13. THIS DRAWING PROVIDES THE BASIS OF DESIGN FOR BIDDING PURPOSES ONLY. FINAL CROSSOVER DESIGN SHALL BE ACCORDING TO SHOP DRAWINGS SUBMITTED BY THE SUPPLIER AND REVIEWED AND APPROVED BY THE ENGINEER.
14. VERIFY INSULATED JOINT REQUIREMENTS WITH THE ENGINEER PRIOR TO FABRICATING CROSSOVER.
15. CROSSOVER TO BE FULLY RESTRAINED WITH MAXIMUM FLANGEWAY WIDTH OF 2¼". SEE NOTE 16.
16. MANUFACTURER SHALL CONDUCT AN ANALYSIS VERIFYING TRACK GAUGE AND FLANGEWAY WIDTH (WHERE RESTRAINED) AND SUBMIT A SUMMARY MEMO OF FINDINGS AND RECOMMENDATIONS TO ENGINEER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OF CROSSOVER.
17. ALL RAILS ARE HIGH STRENGTH HEAD-HARDENED 115RE. REFER TO DETAIL A, SHEET K906 FOR 115RE RAIL DETAILS.
18. ENCAPSULATE TRANSITION BETWEEN STANDARD BOOT AND RESTRAINING RAIL BOOT WITH ELASTOMERIC GROUT.
19. MAINTAIN 8' TRACK SLAB FOR STRAIGHT AND DIVERGING TRACK THROUGH THE TURNOUT.

REV	DATE	DESCRIPTION	DESIGNED BY	MMO			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION NO. 4 STRAIGHT FROG CROSSOVER	SCALE FOR 22"x34": NOT TO SCALE FILENAME: K924.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1	
			CHECKED BY	JWR			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			DRAWING NO.:	SHEET NO.:
			DRAWN BY	MMO						K924	89
			CHECKED BY	JWR							
			APPROVED BY	NKS							
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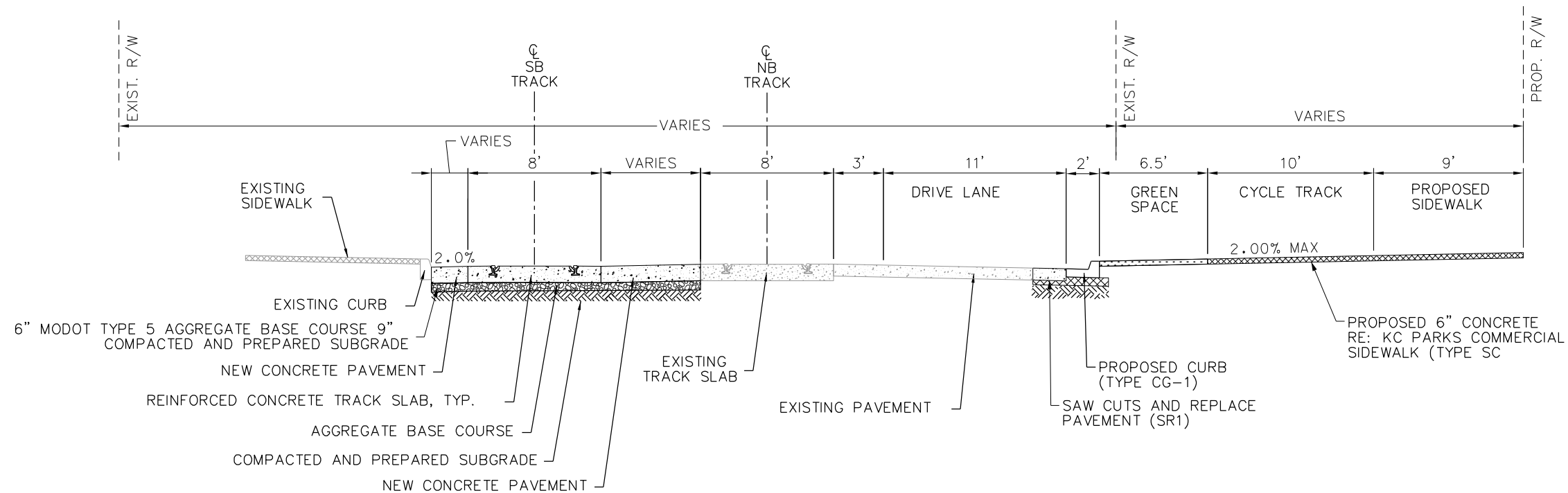


GRAND BOULEVARD AT 3RD STREET PLATFORM

NB STA. 111+33 TO STA. 112+02

NOTES:

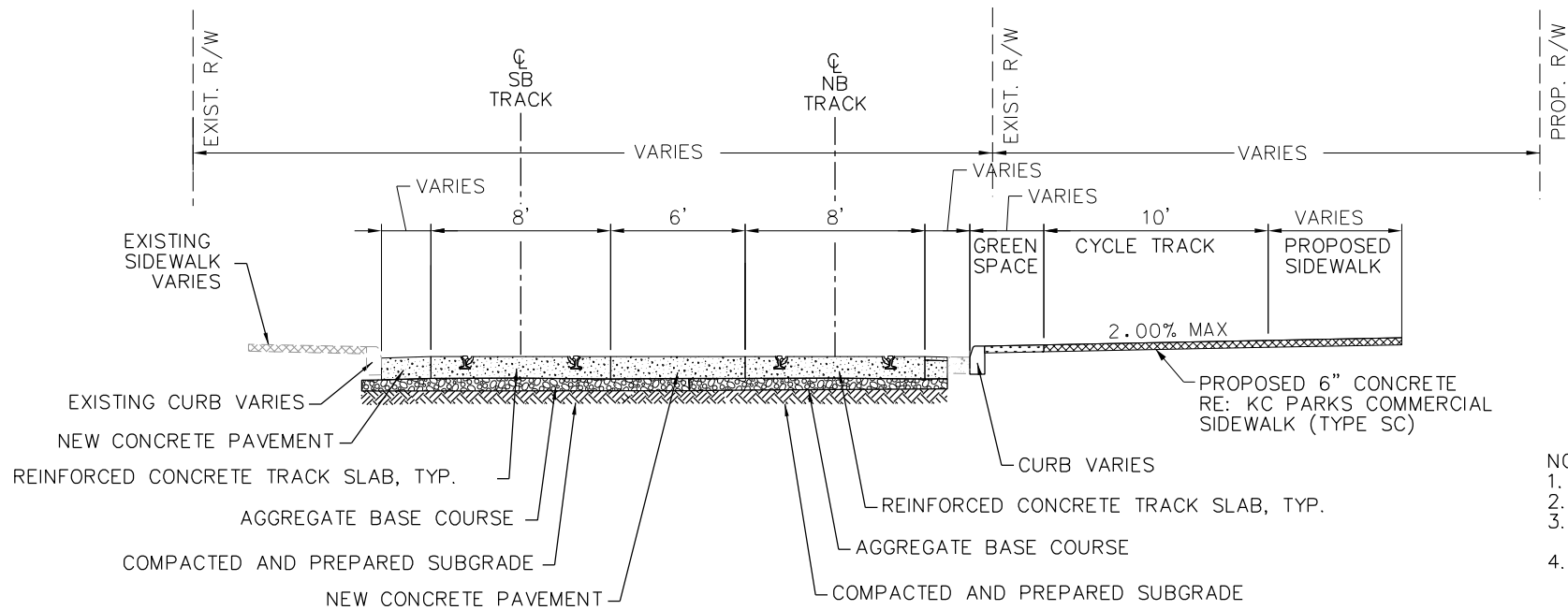
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2. NOT ALL DETAILS SHOWN FOR CLARITY.
3. FOR PAVEMENT LIMITS AND SIDEWALK/CURB REPLACEMENT LOCATIONS, SEE CIVIL PLANS.
4. SAW CUT LOCATION TO BE VERIFIED BY THE CONTRACTOR. ADJUST AS NECESSARY FOR TRACK AND ROAD CONSTRUCTION.
5. FOR PROPOSED LANE CONFIGURATIONS, SEE SIGNING AND STRIPING PLANS.
6. FOR RAISED TRACK SLAB LOCATIONS, SEE TRACK PLANS.
7. FOR PROPOSED TRACK SLAB AND AGGREGATE BASE DETAILS, SEE TRACK PLANS.



GRAND BOULEVARD

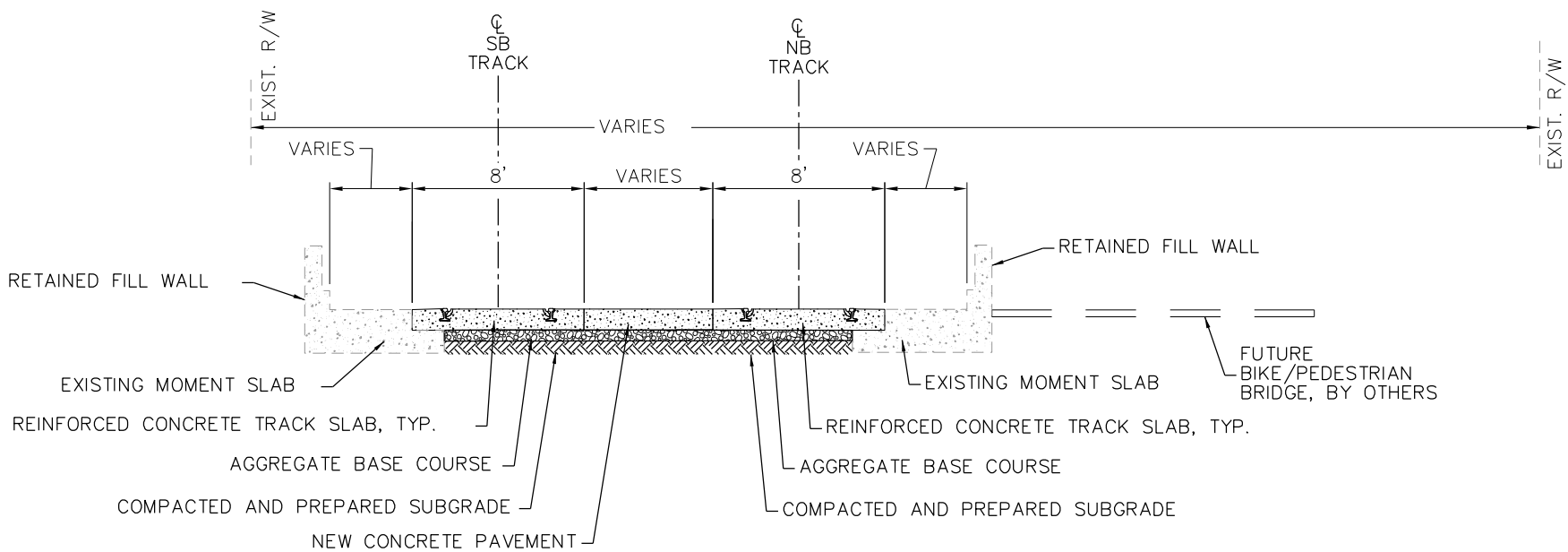
NB STA. 112+02 TO STA. 113+00

REV	DATE	DESCRIPTION	DESIGNED BY	MM					ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE FILENAME: C001.dgn CONTRACT NO.: CONTRACT NO.: *** VOLUME: DRAWING NO.: SHEET NO.: C001 90	
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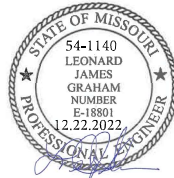


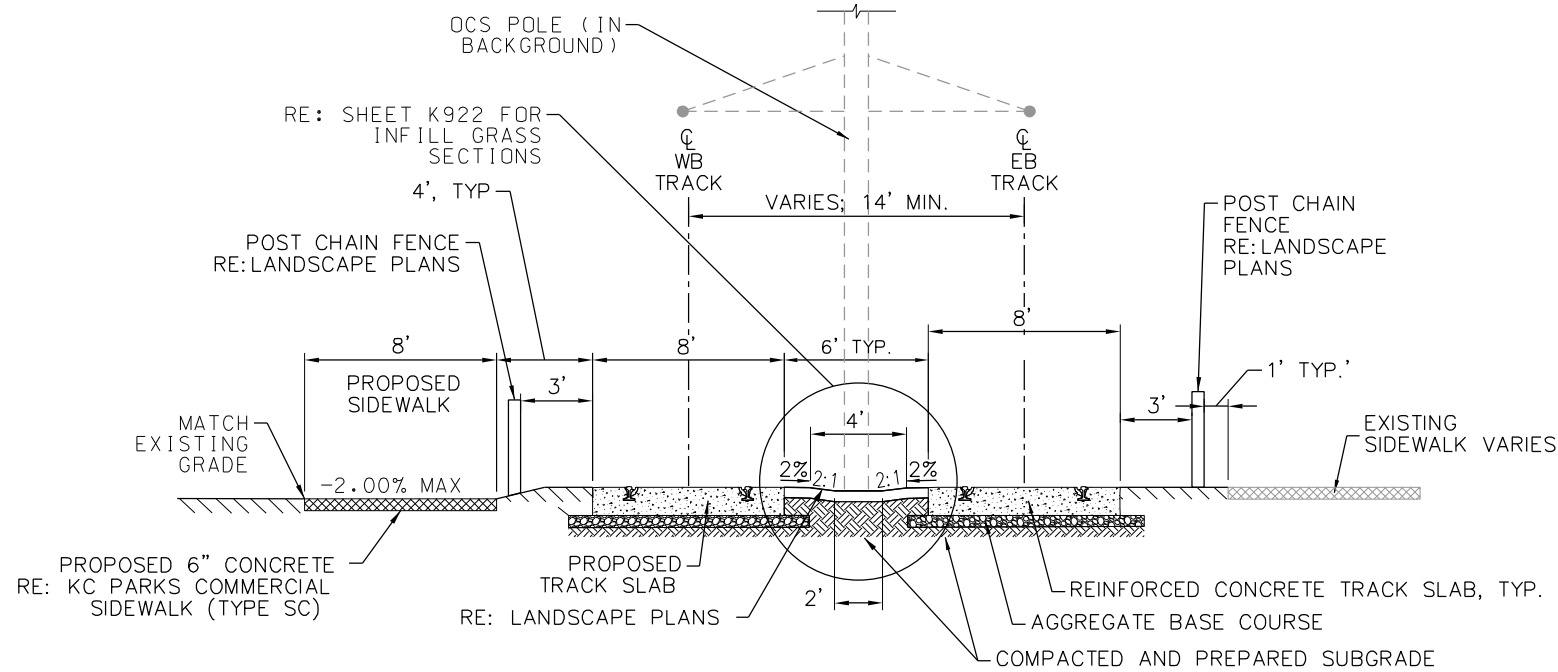
GRAND BOULEVARD
NB STA. 113+00 TO STA. 115+81

- NOTES:
1. ALL TYPICAL SECTIONS TAKEN LOOKING NORTH.
 2. NOT ALL DETAILS SHOWN FOR CLARITY.
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 6. FOR RAISED TRACK SLAB LOCATIONS, SEE TRACK PLANS.
 7. FOR PROPOSED TRACK SLAB AND AGGREGATE BASE DETAILS, SEE TRACK PLANS.



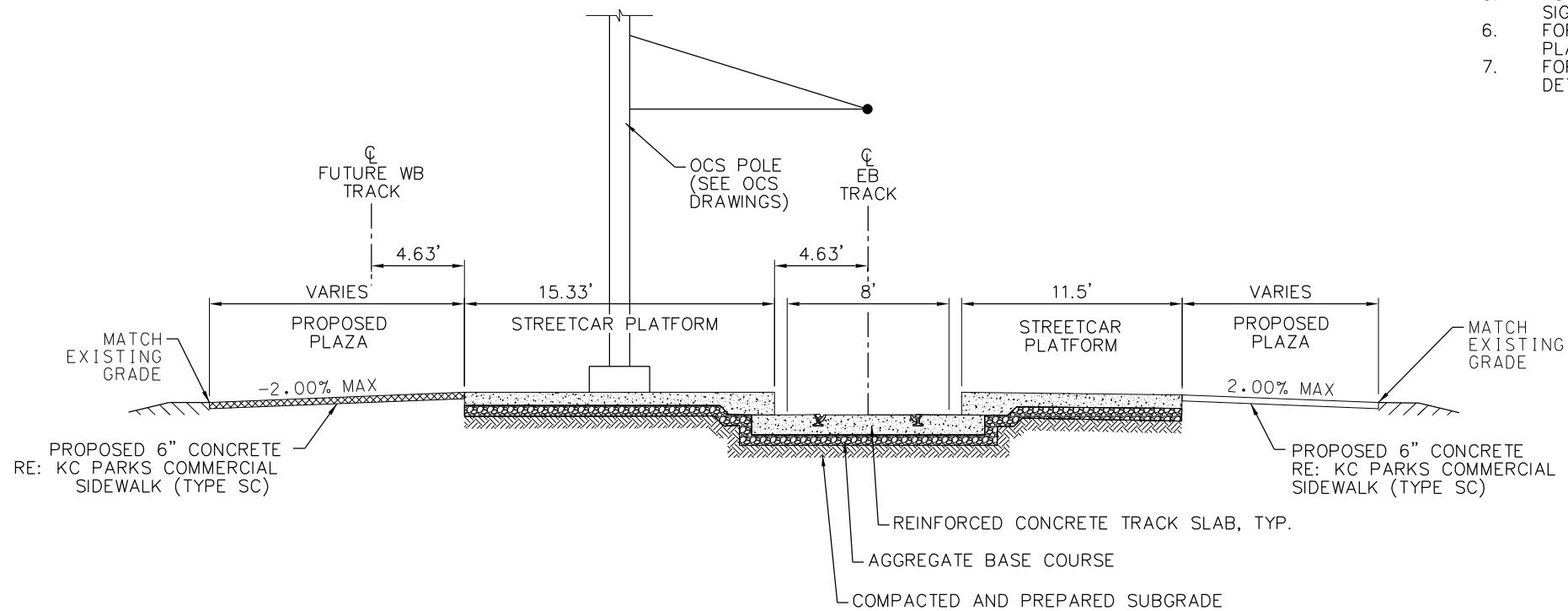
GRAND BOULEVARD
NB STA. 115+81 TO STA. 117+62
AND
NB STA. 131+19 TO STA. 135+57
RETAINED FILL TO BRIDGE

REV	DATE	DESCRIPTION	DESIGNED BY	MM			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallaferrro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TYPICAL SECTIONS 2	SCALE FOR 22"x34": NOT TO SCALE	
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			APPROVED BY	NKS									DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022			9:46:53 AM		DATE		12-23-2022		NOT FOR CONSTRUCTION				C002	

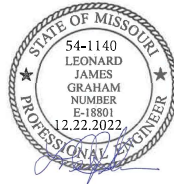


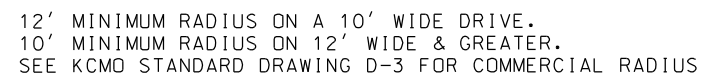
BERKLEY RIVERFRONT PARK
NB STA. 138+08 TO STA. 148+88

- NOTES:
1. ALL TYPICAL SECTIONS TAKEN LOOKING NORTH.
 2. NOT ALL DETAILS SHOWN FOR CLARITY.
 3. FOR PAVEMENT LIMITS AND SIDEWALK/CURB REPLACEMENT LOCATIONS, SEE CIVIL PLANS.
 4. SAW CUT LOCATION TO BE VERIFIED BY THE CONTRACTOR. ADJUST AS NECESSARY FOR TRACK AND ROAD CONSTRUCTION.
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 6. FOR RAISED TRACK SLAB LOCATIONS, SEE TRACK PLANS.
 7. FOR PROPOSED TRACK SLAB AND AGGREGATE BASE DETAILS, SEE TRACK PLANS.



BERKLEY RIVERFRONT PLATFORM
NB STA. 148+88 TO STA. 150+83

REV	DATE	DESCRIPTION	DESIGNED BY	MM			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallaferrro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: C003.dgn CONTRACT NO.: CONTRACT NO.: *** VOLUME: I			
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PLOT DATE: 12/23/2022			9:46:55 AM		DATE 12-23-2022		NOT FOR CONSTRUCTION		TYPICAL SECTIONS 3		DRAWING NO.: C003		SHEET NO.: 92		



1. SIDEWALK CROSS SLOPES THROUGH DRIVEWAY MUST BE LESS THAN 2% MAX TO COMPLY WITH THE AMERICAN DISABILITY ACT.
2. THE TOP 6" OF DRIVEWAY SUBGRADE SHALL BE COMPACTED TO 95% OF STANDARD MAXIMUM DENSITY.
3. THAT PORTION OF THE DRIVE WITHIN STREET R.O.W. SHALL BE P.C.C. CONCRETE. CONCRETE SHALL CONFORM TO KCMO STANDARD SPECIFICATIONS SECTION 2300.
4. EXPANSION JOINT FILLER AND JOINT SEALING COMPOUND SHALL CONFORM TO KCMO STANDARD SPECIFICATIONS SECTION 2209.2.
5. CURING MEMBRANES SHALL CONFORM TO KCMO STANDARD SPECIFICATIONS SECTION 2301.5
6. CURB TRANSITIONS ON DRIVEWAY FLARES ARE CONSIDERED PART OF DRIVEWAY.
7. IN CBD, 6 x 6-W2.9 x W2.9 REINFORCING SHALL BE PLACED IN CENTER OF SLAB THICKNESS.
8. ON PARK DEPT. PROPERTY USE TYPE VI ENTRANCE AND PLACE 6 x 6-W1.4 x W1.4 REINFORCING IN CENTER OF SLAB THICKNESS.
9. CONTRACTION JOINTS SHALL BE SPACED AT 12' MAX. BOTH DIRECTIONS.
10. FORM 3/4 " LIP AT PAVEMENT LINE ON DRIVES IN C-1 & CS CURBS.
11. MINIMUM SIDEWALK WIDTHS: 4' RESIDENTIAL, 5' HIGHER CLASS STREET
12. WHERE DRIVE WIDTH IS 14 FEET OR LESS FLARES SHALL BE 7.5 FEET WIDE AT CURB AND SHALL EXTEND AT A 45 ANGLE THROUGH THE SIDEWALK.
13. SIDEWALK SLOPE 2% MAX AT TIE IN.



10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 00085

Taliaferro & Browne, Inc.
1020 E. 8th Street
Kansas City, MO 64106
816-283-3456
Certificate of Authority: 000466

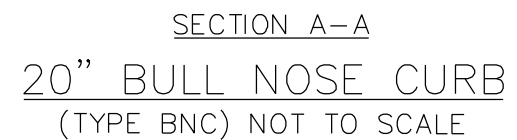
TYPICAL DRIVEWAY DETAILS

C004

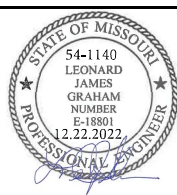
1. TO BE USED IN COMMERCIAL DISTRICTS AND SPECIAL VENUE LOCATIONS.
2. CONCRETE: CONTRACTOR SHALL PLACE AT A MINIMUM OF 6" OF CONCRETE.
CONCRETE SPEC: 4,000 PSI STRENGTH @ 28 DAYS; 4 INCHES $\pm$ 1 INCH SLUMP; AND 6% $\pm$ 1% AIR ENTRAINMENT.
3. PLACEMENT: ON 4 INCH THICK AB3 GRAVEL BASE OVER SUB-GRADE, EACH COMPACTED TO 95% MAXIMUM DENSITY AT OPTIMUM MOISTURE. PARKS AND RECREATION TO INSPECT FORMS PRIOR TO PLACING CONCRETE.
4. REINFORCING: 6x6-W2.9xW2.9 WELDED WIRE FABRIC ON 2 INCH HIGH CHAIRS AT 24 INCHES ON CENTER. CUT REINFORCING FABRIC AT EXPANSION JOINTS.
5. EXPANSION JOINTS: 1/2 INCH THICK PREMOLDED NON-EXTRUDING FILLER HOMEX-300 OR APPROVED EQUAL. JOINT SEALER SHALL BE AS ONE COMPONENT, GUN-GRADE, MOISTURE CURED EPOXY OR URETHANE SUCH AS "VULCUM 45" OR EQUAL AS APPROVED BY THE ENGINEER. PLACE AT INTERFACE WITH OTHER STRUCTURES AND AS REQUIRED WITH A MAXIMUM 100 FOOT SPACING.
6. CONTRACTION JOINTS: SAW-CUT OR TOOLED GROOVE 1/4 INCH WIDE IN THE TOP ONE INCH OF WET CONCRETE WITH GROOVING TOOL OF 1/4" RADIUS. CLEAN AND SEAL JOINT. MATCH SPACING OF ADJOINING SIDEWALK WHERE PRESENT OR STANDARD SPACING OF 6 FEET.
7. FINISHING: METAL FLOAT THEN LIGHT BROOM. UPPER LONGITUDINAL EDGES TO BE ROUNDED AND FINISHED USING 1/4" RADIUS, 4 INCH WIDE EDGING TOOL OR AS DIRECTED. PICTURE FRAME FINISH UNLESS SPECIFIED OTHERWISE BY THE ENGINEER OR ADJACENT SITE CONDITIONS.
8. CURING: ONE COAT OF WHITE PIGMENTED LIQUID MEMBRANE FORMING COMPOUND TYPE 2 IN ACCORDANCE WITH ASTM C-309, APPLIED AT 250-275 SQ FT/GALLON OR APPROVED EQUAL.



1. CONCRETE SPEC: DEPTH OF CURB SHALL BE A MINIMUM OF 8" THRU THE HANDICAP ACCESS RAMP; 4,000 PSI STRENGTH @ 28 DAYS; 2 INCH ± 1 INCH SLUMP; AND 6% ± 1% AIR ENTRAINMENT.
2. PLACEMENT: ON 4 INCH THICK AB3 GRAVEL BASE OVER SUB-GRADE, EACH COMPACTED TO 95% MAXIMUM DENSITY AT OPTIMUM MOISTURE. PARKS AND RECREATION TO INSPECT FORMS PRIOR TO PLACING CONCRETE.
3. DOWELS: USE 5/8" DIA. x 2' SMOOTH DOWELS "⊕" AT LOCATIONS SHOWN.
4. EXPANSION JOINTS: 1/2" WIDE EXPANSION JOINTS WITH 2' DOWELS SHALL BE PLACED AT RADIUS POINTS AND AT 100' INTERVALS. THESE DOWELS SHALL BE GREASED AND WRAPPED ON ONE END WITH EXPANSION TUBES. PREMOLED NON-EXTRUDING FILLER HOMEX-300 (1/2" THICK) OR APPROVED EQUAL. JOINT SEALER (1" DEEP) SHALL BE AS ONE COMPONENT, GUN-GRADE, MOISTURE CURED EPOXY OR URETHANE SUCH AS "VULCUM 45" OR EQUAL AS APPROVED BY THE ENGINEER.
5. CONTRACTION JOINTS: 1" DEEP CONTRACTION JOINTS SHALL BE INSTALLED AT APPROXIMATELY 10' INTERVALS. THESE JOINTS SHALL PASS ACROSS THE ENTIRE CURB SECTION.
6. REINFORCING: TWO #4 REBARS CONTINUOUS IN FACE OF CURB.
7. FINISHING: METAL FLOAT THEN LIGHT BROOM.
8. BACKFILL: APPROVED COMPACTED EARTH SLOPED 2% MAXIMUM TOWARDS STREET OR AS DIRECTED OTHERWISE. SEED OR ROD AS DIRECTED.
9. CURING: ONE COAT OF WHITE PIGMENTED LIQUID MEMBRANE FORMING COMPOUND TYPE 2 IN ACCORDANCE WITH ASTM C-309, APPLIED AT 250-275 SQ. FT/GALLON OR APPROVED EQUAL.
10. CURB REMOVAL: SAW-CUT AT NEAREST CONTROL JOINT.



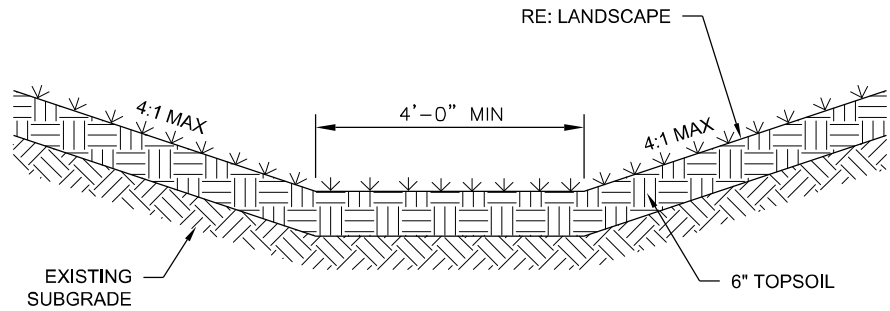
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			CHECKED BY	PY
			DRAWN BY	BW
			CHECKED BY	TM
			APPROVED BY	NKS
PLOT DATE: 12/23/2022			9:47:00 AM	DATE 12-23-2022



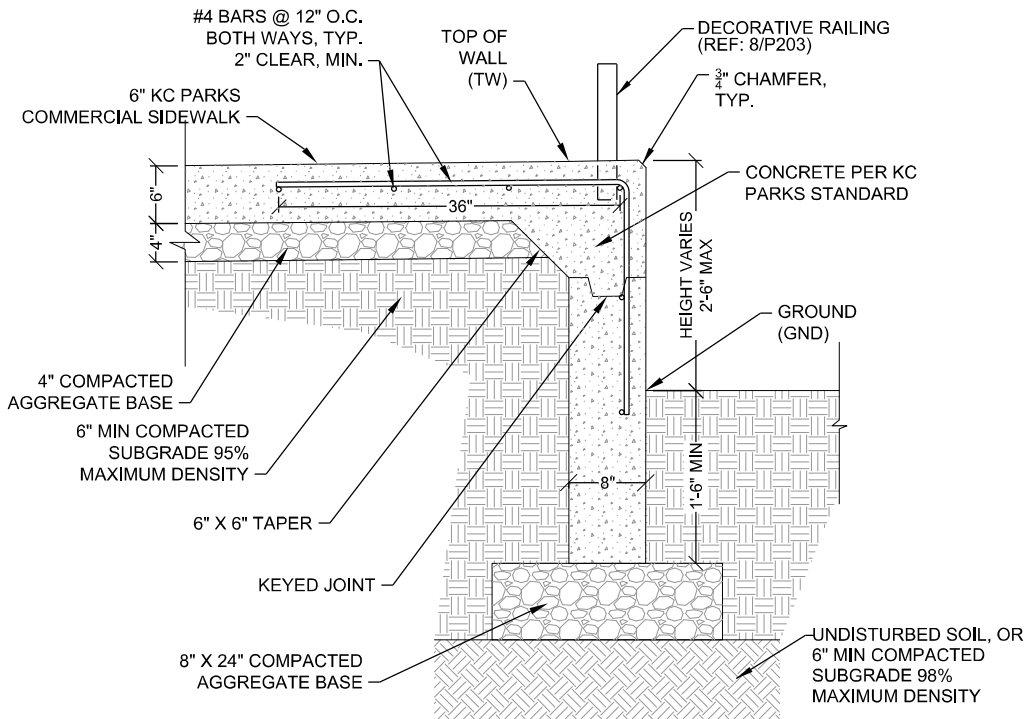
erro & Browne, Inc.
 E. 8th Street
 as City, MO 64106
 83-3456
 cate of Authority: 000466

TYPICAL CURB DETAILS

SCALE FOR 22"x34":
NOT TO SCALE
FILENAME:
C005.dgn
CONTRACT NO.:
CONTRACT NO.***
VOLUME:
I
DRAWING NO.: SHEET N
C005 94



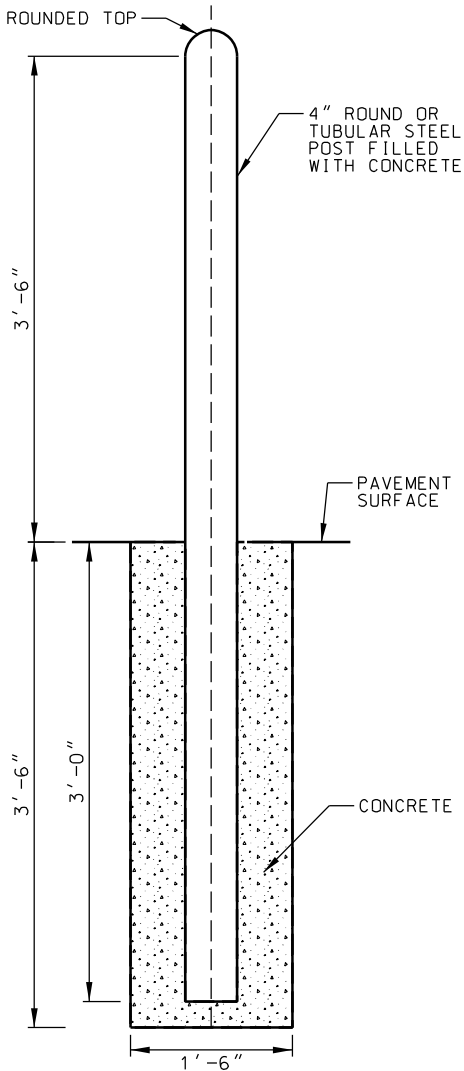
GRASS DRAINAGE SWALE
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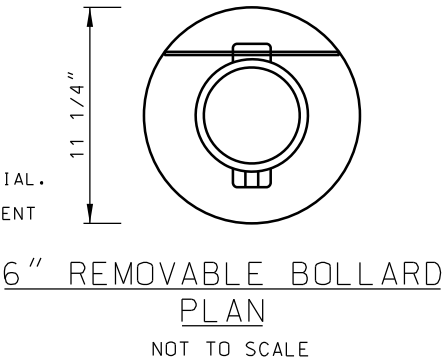
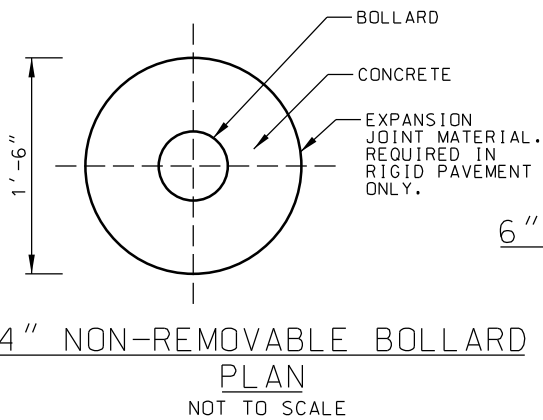
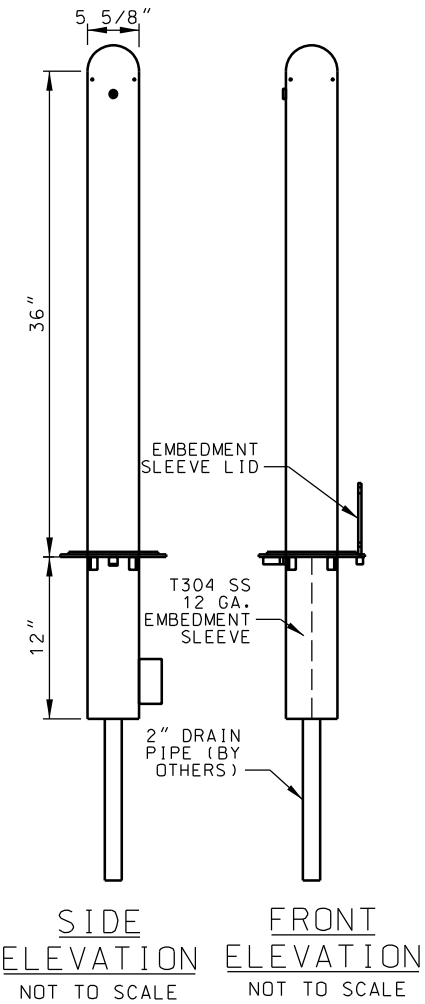
SIDEWALK GRADE WALL
NOT TO SCALE

- NOTES:
- MUST BE A RAISED LINEAR SURFACE THAT IS TRAPEZOIDAL IN CROSS SECTION FOR THE PURPOSE OF DELINEATING THE BOUNDARY BETWEEN A SIDEWALK AND A SEPARATED BIKE LANE AT SIDEWALK LEVEL OR BETWEEN A PEDESTRIAN ACCESS ROUTE AND THE SHARED ZONE IN A SHARED STREET
 - BASIS OF DESIGN: TEKWAY TRAPEZOID DELINEATOR, 12"x48" TILE, CHARCOAL GRAY, BY STRONGGO INDUSTRIES OR APPROVED EQUAL
 - INSTALL PER MANUFACTURER'S INSTRUCTIONS
 - DIMENSIONS ARE IN INCHES
 - MATERIALS SHOULD MEET THE FOLLOWING ASTM STANDARDS:
- | PHYSICAL PROPERTY | TEST METHOD | RESULTS |
|----------------------|--------------|------------|
| Compression Strength | ASTM C 39-04 | >16,800psi |
| Water Absorption | ASTM C 97 | <0.25% |
| Freeze / Thaw | ASTM C 1262 | =0.00 % |
| Slip Resistance | ASTM C 1028 | Fa >0.85 |
| Flexural Strength | ASTM C 947 | >3,000 psi |
| Tensile Strength | ASTM C 496 | >3,000 psi |

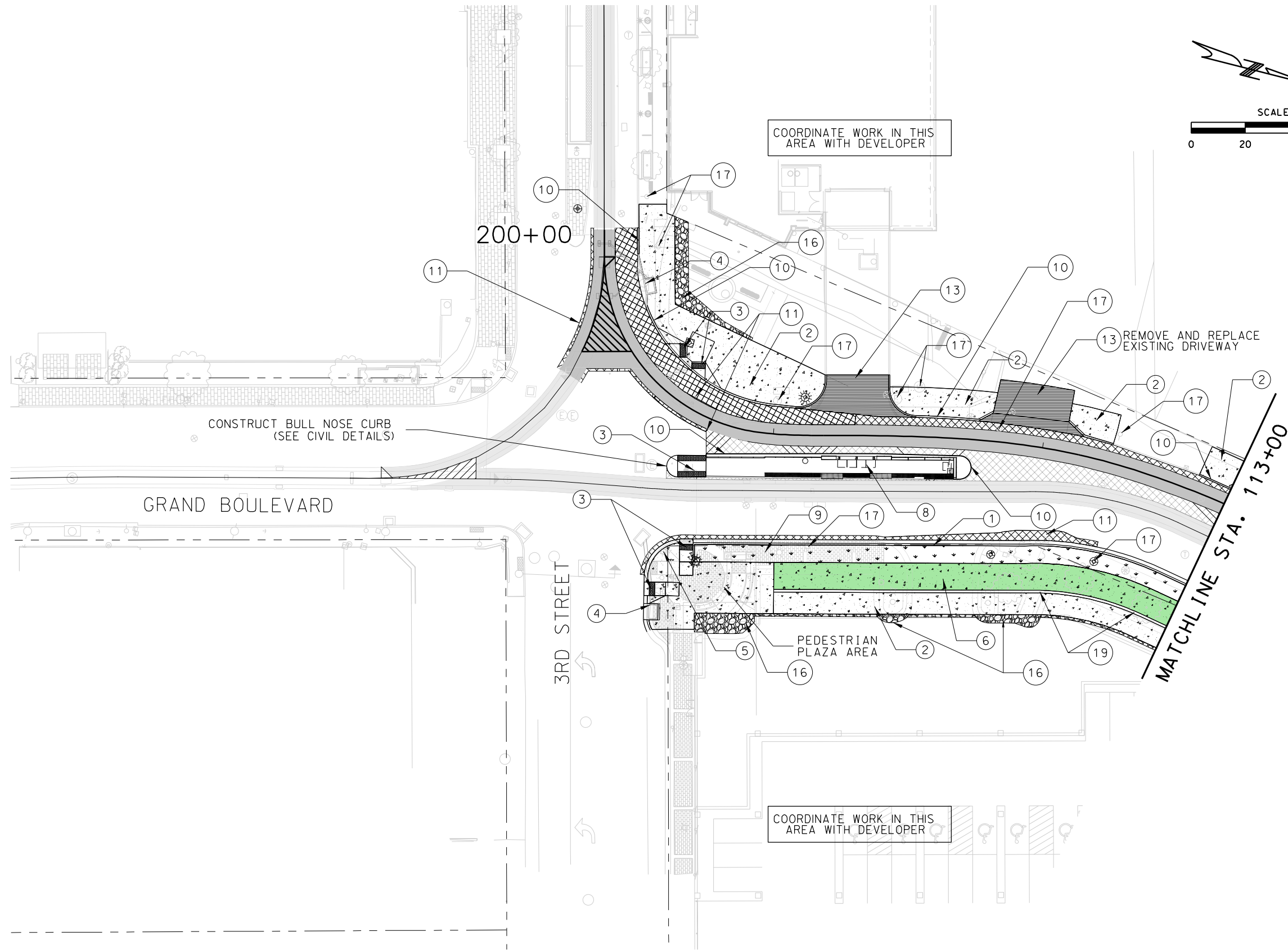
TRAPEZOID DELINEATOR TILE
NOT TO SCALE



ELEVATION
NOT TO SCALE



REV	DATE	DESCRIPTION	DESIGNED BY	TM	ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE	
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					Suite 600			Kansas City, MO 64106		CONTRACT NO.:	
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PLOT DATE: 12/23/2022			9:47:03 AM		DATE		12-23-2022	NOT FOR CONSTRUCTION		SHEET NO.:	
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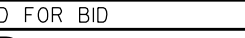


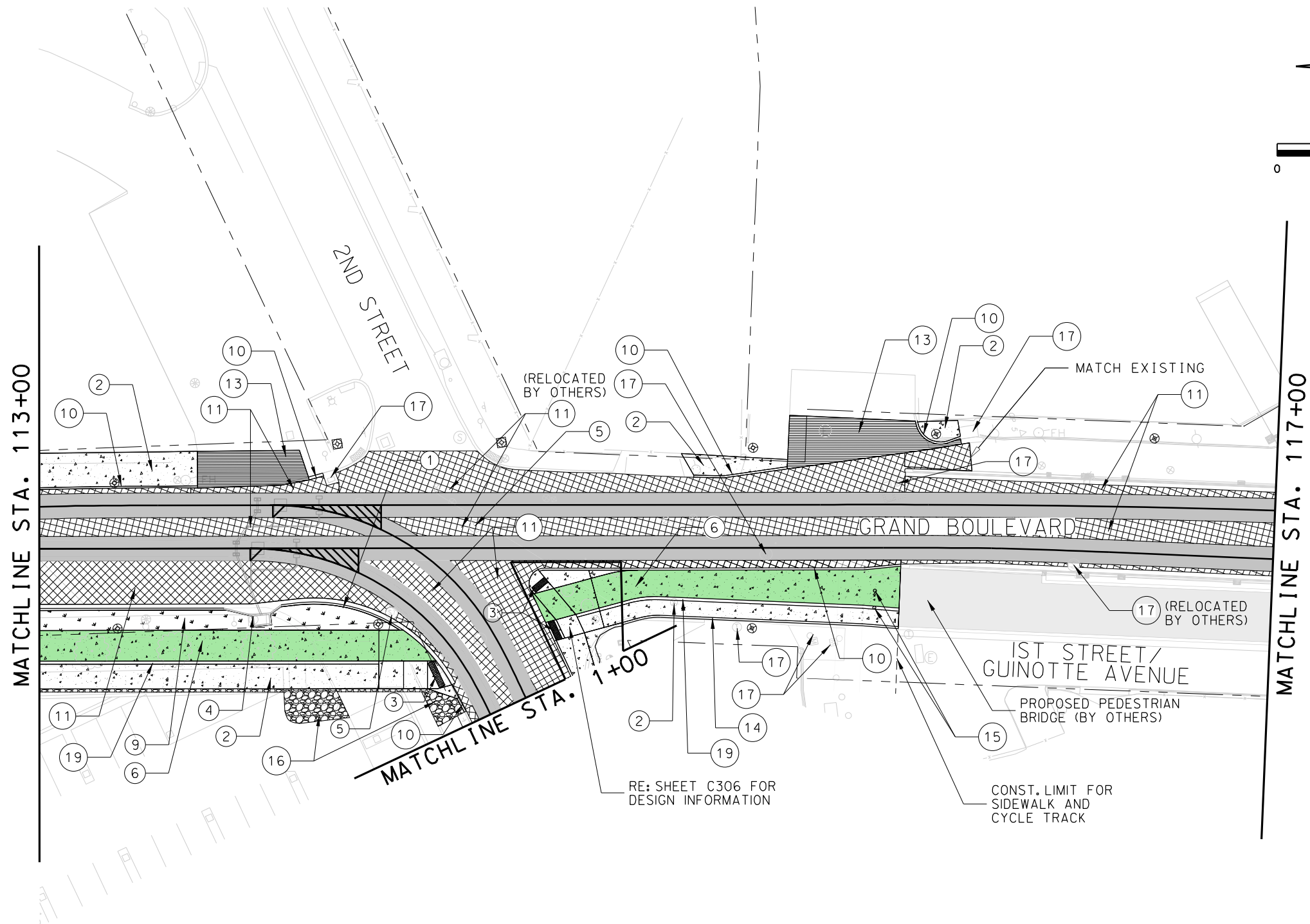
CONSTRUCTION NOTES

- 1 CONSTRUCT TYPE CG-1 CURB/GUTTER (SEE KC PARKS STD DWG CG)
- 2 CONSTRUCT TYPE SC COMMERCIAL SIDEWALK (SEE KC PARKS STD DWG SC)
- 3 CONSTRUCT ADA CURB RAMP (SEE CIVIL DETAILS)
- 4 SEE DRAINAGE PLANS
- 5 ADJUST MANHOLE TO MATCH FINISHED GRADE
- 6 CONSTRUCT COLORED CONCRETE CYCLE TRACK- GREEN
- 8 CONSTRUCT STREETCAR STOP (SEE PLATFORM PLANS)
- 9 SEE LANDSCAPE PLANS
- 10 CONSTRUCT TYPE C CURB (SEE KC PARKS STD DWG C)
- 11 CONSTRUCT 10" MIN. PCCP
- 13 CONSTRUCT COMMERCIAL DRIVEWAY (SEE KCMO STD DWG D-2)
- 16 INSTALL TEMPORARY 8" GRAVEL PAVEMENT
- 17 PROTECT EXISTING UTILITY
- 19 TRAPEZOID DELINEATOR TILE

LEGEND

- CONCRETE SIDEWALK
- GREEN CONCRETE CYCLE TRACK
- LANDSCAPE
- TRACK SLAB
- 10" MIN. PCCP
- CONCRETE DRIVEWAY
- TEMPORARY GRAVEL PAVEMENT

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022			KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	PY			HDR Engineering, Inc.		Tallaferrro & Browne, Inc.			CIVIL PLAN		FILENAME:			
			DRAWN BY	DT			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466			STA BEGIN TO STA 113+00		CONTRACT NO.:			
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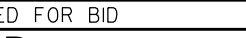


CONSTRUCTION NOTES

- 1 CONSTRUCT TYPE CG-1 CURB/GUTTER (SEE KC PARKS STD DWG CG)
- 2 CONSTRUCT TYPE SC COMMERCIAL SIDEWALK (SEE KC PARKS STD DWG SC)
- 3 CONSTRUCT ADA CURB RAMP (SEE CIVIL DETAILS)
- 4 SEE DRAINAGE PLANS
- 5 ADJUST MANHOLE TO MATCH FINISHED GRADE
- 6 CONSTRUCT COLORED CONCRETE CYCLE TRACK- GREEN
- 9 SEE LANDSCAPE PLANS
- 10 CONSTRUCT TYPE C CURB (SEE KC PARK STD DWG C)
- 11 CONSTRUCT 10" MIN. PCCP
- 13 CONSTRUCT COMMERCIAL DRIVEWAY (SEE KCMO STD DWG D-2)
- 14 CONSTRUCT SIDEWALK GRADE WALL (SEE CIVIL DETAILS)
- 15 INSTALL REMOVABLE BOLLARD (SEE CIVIL DETAILS)
- 16 INSTALL TEMPORARY 8" GRAVEL PAVEMENT
- 17 PROTECT EXISTING UTILITY
- 18 CONSTRUCT HMAC FULL DEPTH
- 19 TRAPEZOID DELINEATOR TILE

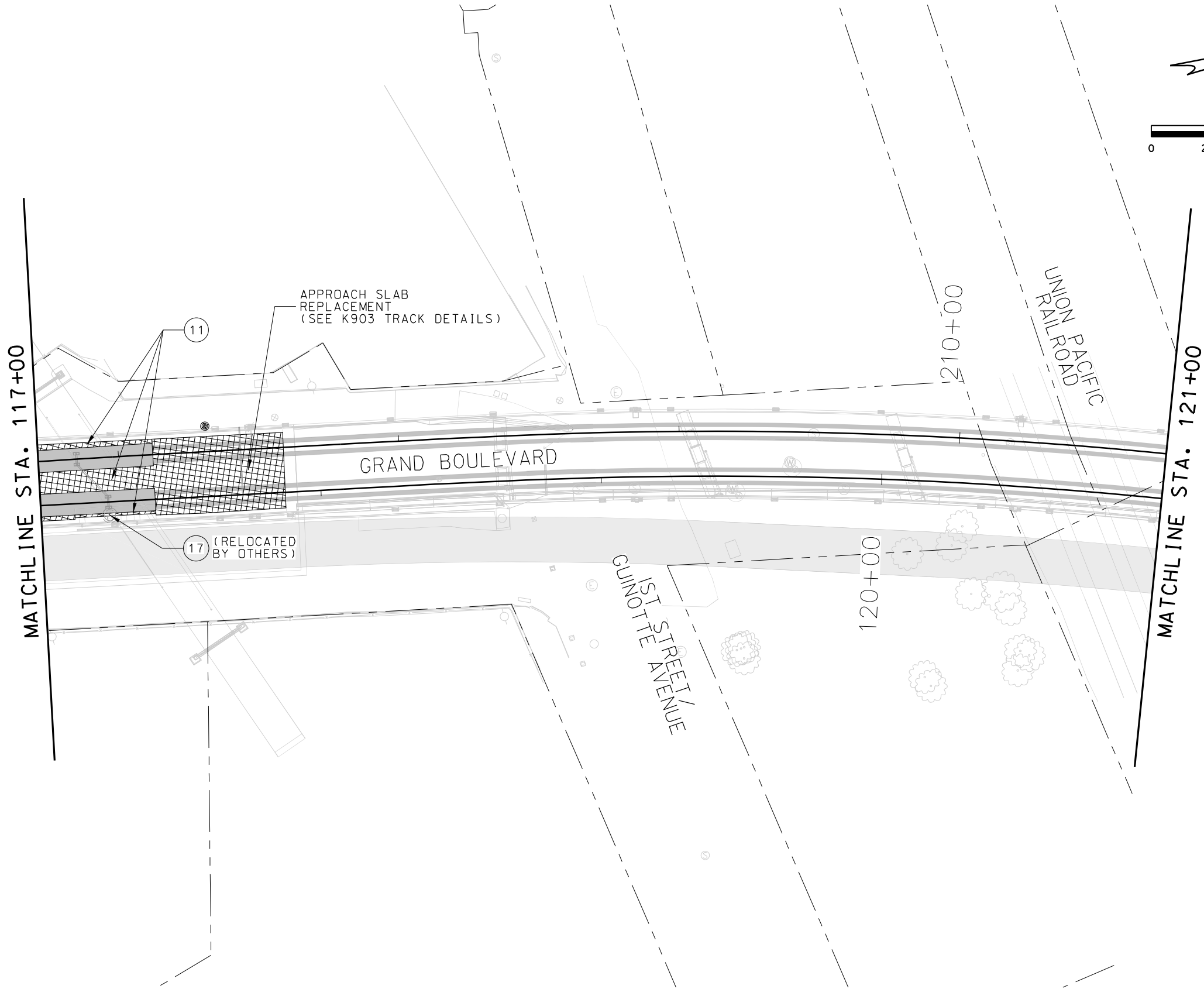
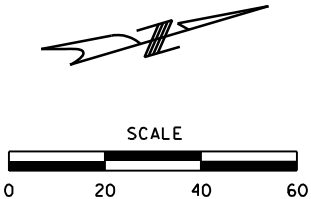
LEGEND

- CONCRETE SIDEWALK / TRAIL
- GREEN CONCRETE CYCLE TRACK
- LANDSCAPE
- TRACK SLAB
- 10" MIN. PCCP
- CONCRETE DRIVEWAY
- TEMPORARY GRAVEL PAVEMENT
- HMAC FULL DEPTH

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
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			DRAWN BY	DT			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		Talliaferro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466			CONTRACT NO.: CONTRACT NO. ***	
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			APPROVED BY	NKS								DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022 9:47:13 AM			DATE	12-23-2022			NOT FOR CONSTRUCTION					C102	97

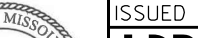
CONSTRUCTION NOTES

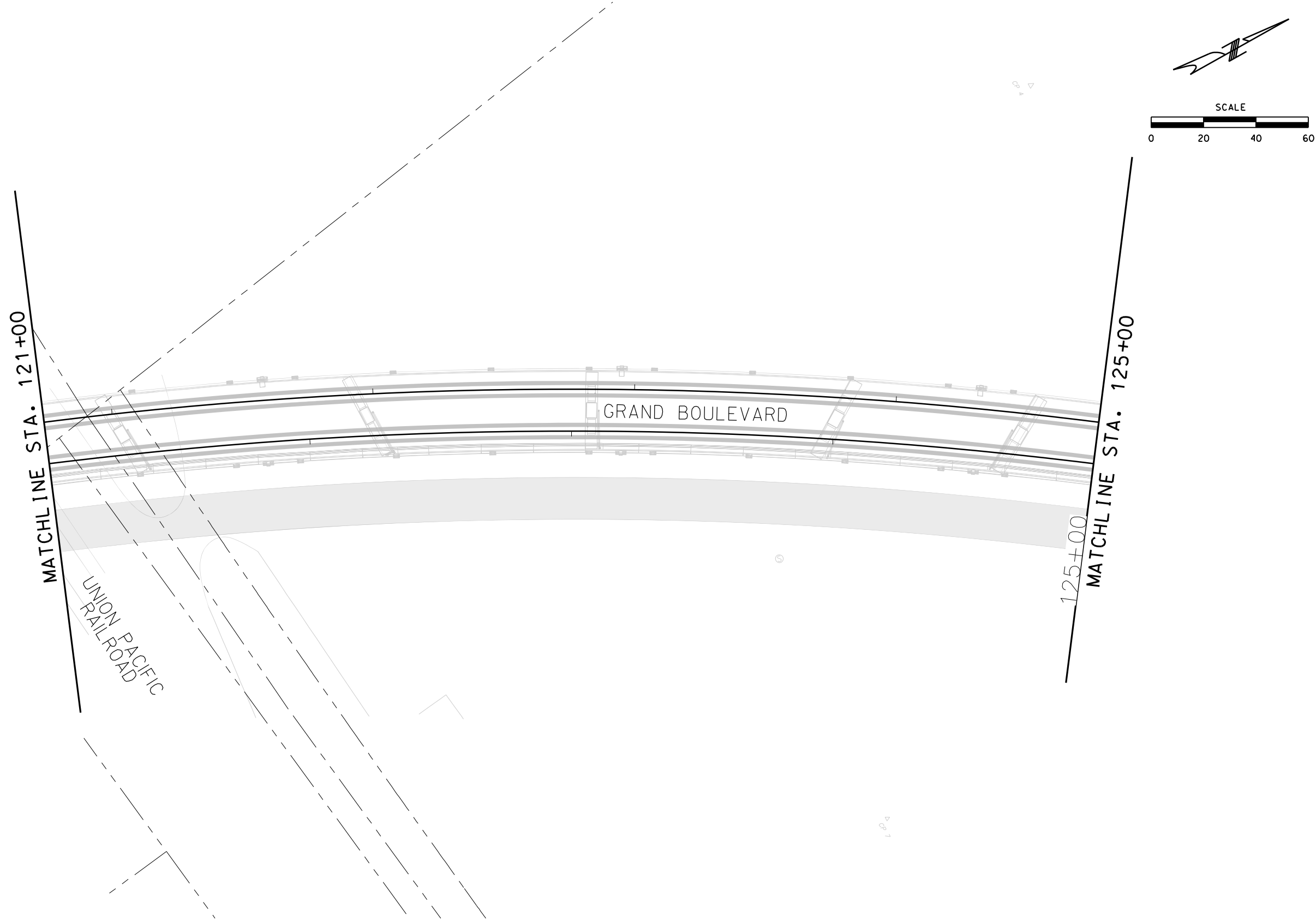
- 11
- CONSTRUCT 10" MIN. PCCP
- 17
- PROTECT EXISTING UTILITY



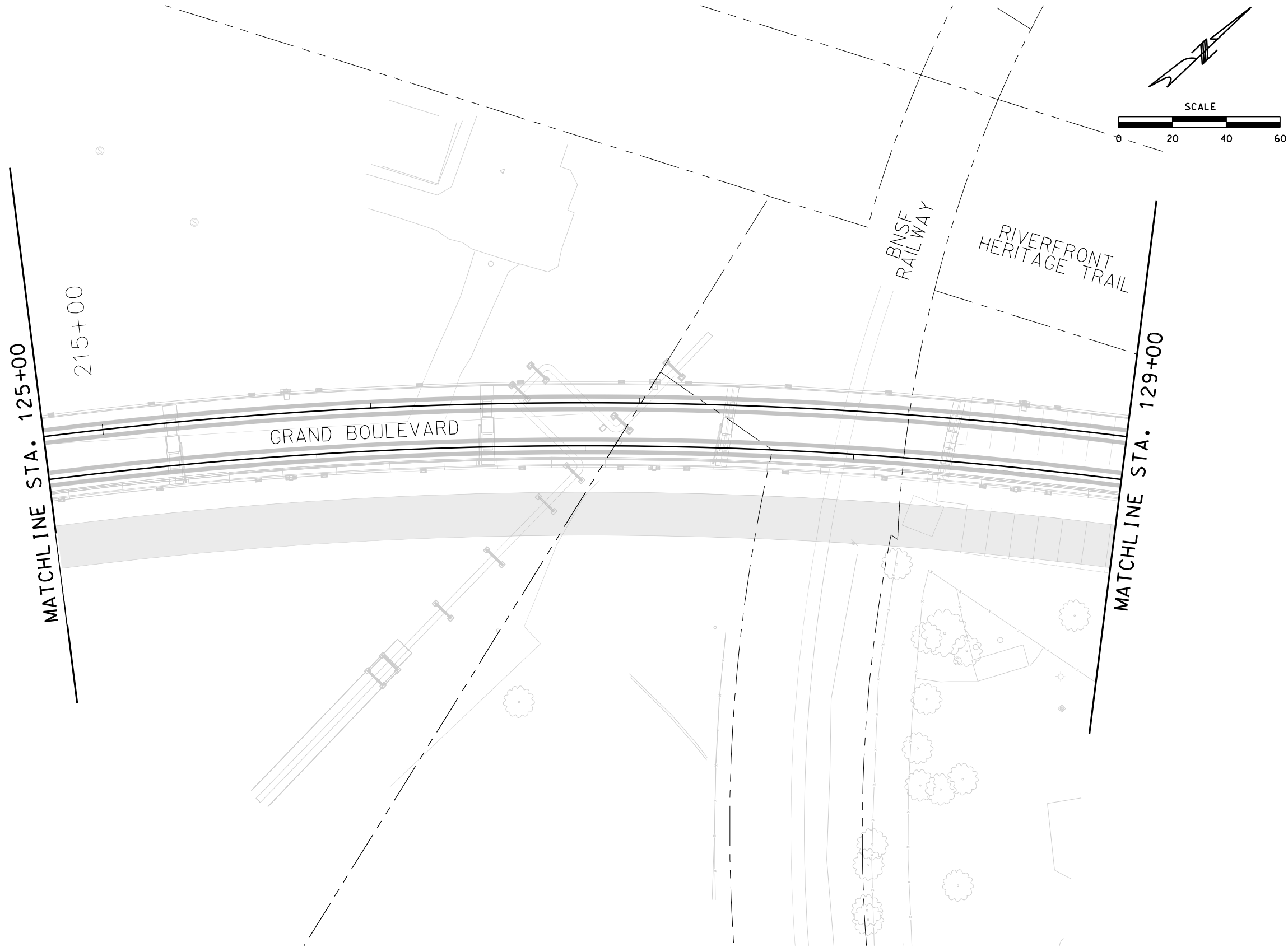
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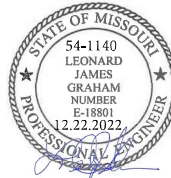
- 10" MIN. PCCP
- TRACK SLAB

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	FILENAME:	
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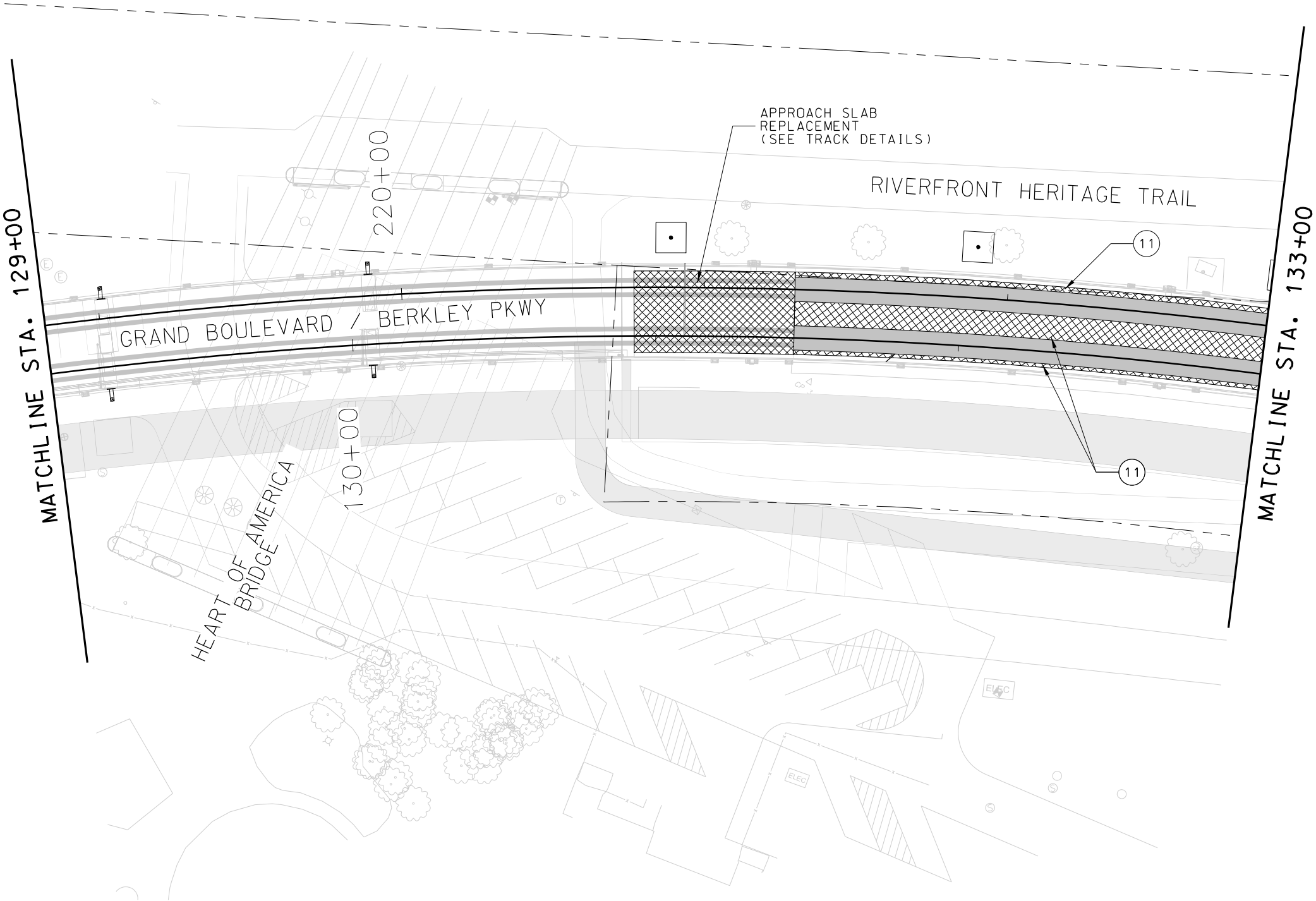
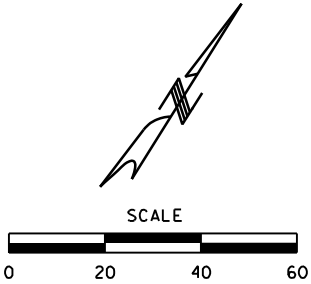
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			APPROVED BY	NKS								
PLOT DATE: 12/23/2022			9:47:19 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION					



REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	PY			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallafiero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	CIVIL PLAN STA 125+00 TO STA 129+00			FILENAME: C105.dgn	
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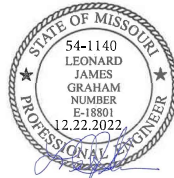
CONSTRUCTION NOTES

11 CONSTRUCT 10" MIN. PCCP



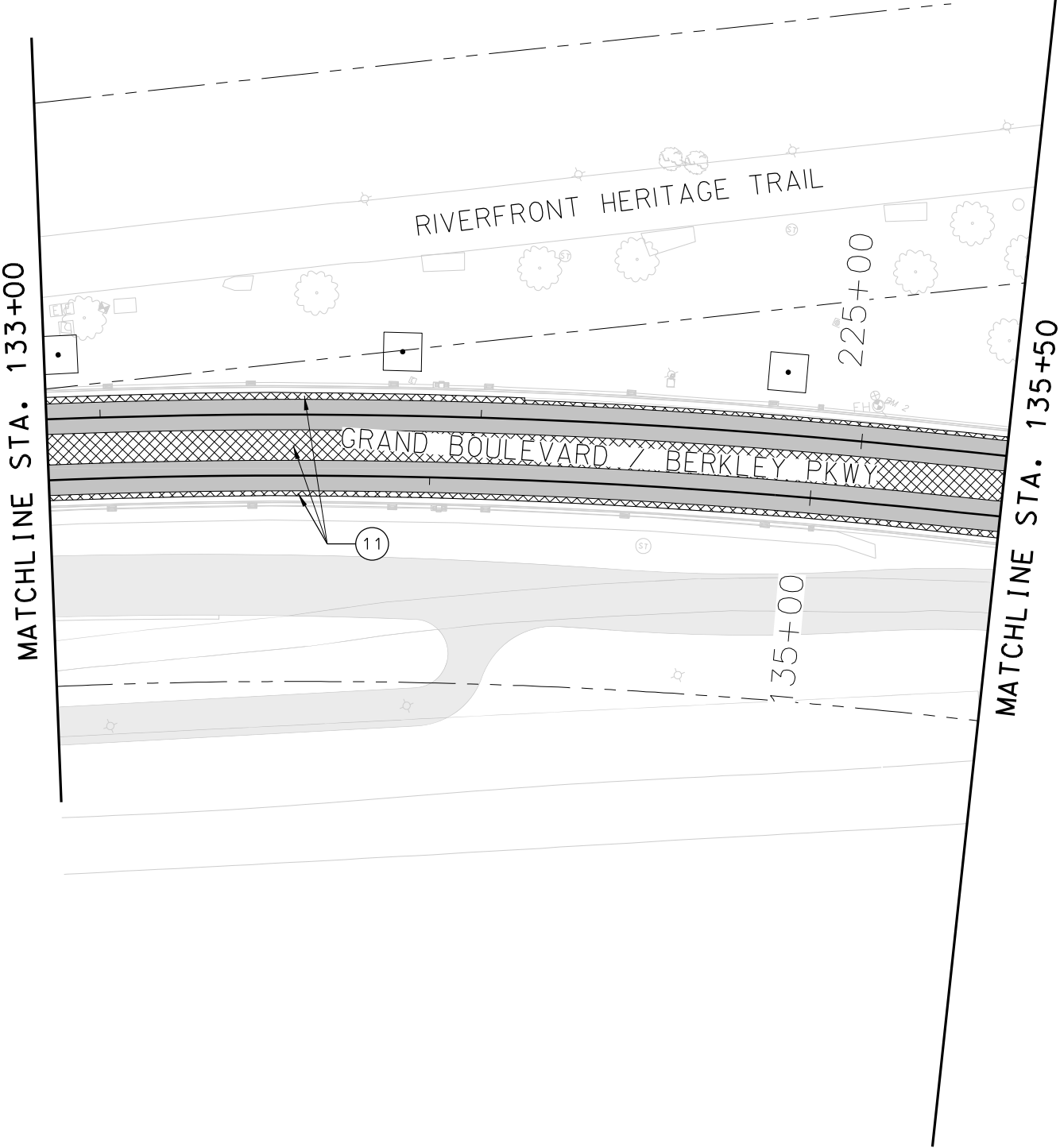
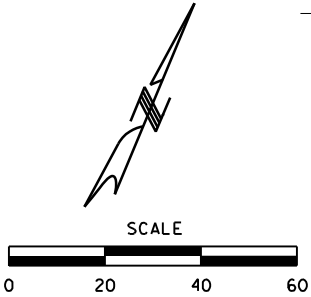
LEGEND

-  10" MIN. PCCP
-  TRACK SLAB

REV			DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 20'	
					CHECKED BY	PY			 HDR Engineering, Inc.						
					DRAWN BY	DT			 Tallafiero & Browne, Inc.						
					CHECKED BY	TRM			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856						
					APPROVED BY	NKS			1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466						
PLOT DATE: 12/23/2022			9:47:26 AM	DATE	12-23-2022			NOT FOR CONSTRUCTION				CIVIL PLAN STA 129+00 TO STA 133+00		DRAWING NO.:	SHEET NO.:
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CONSTRUCTION NOTES

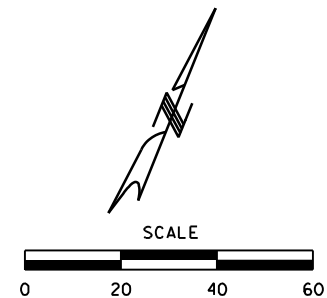
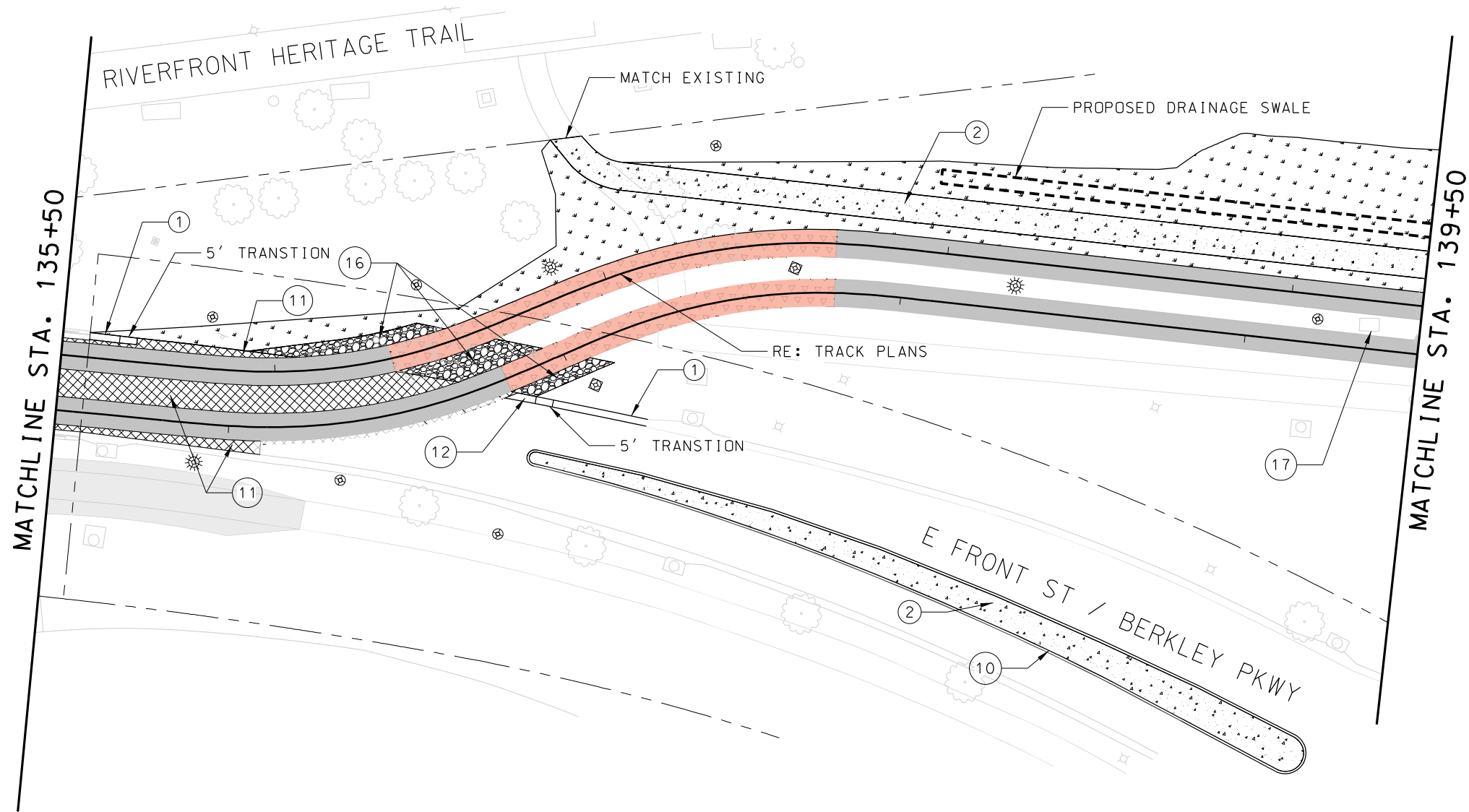
11 CONSTRUCT 10" MIN. PCCP



LEGEND

- 10" MIN. PCCP
- TRACK SLAB

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	FILENAME:			
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PLOT DATE: 12/23/2022 9:47:29 AM			DATE	12-23-2022			NOT FOR CONSTRUCTION		CIVIL PLAN STA 133+00 TO STA 135+50		DRAWING NO.: C107	SHEET NO.: 102		

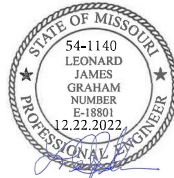


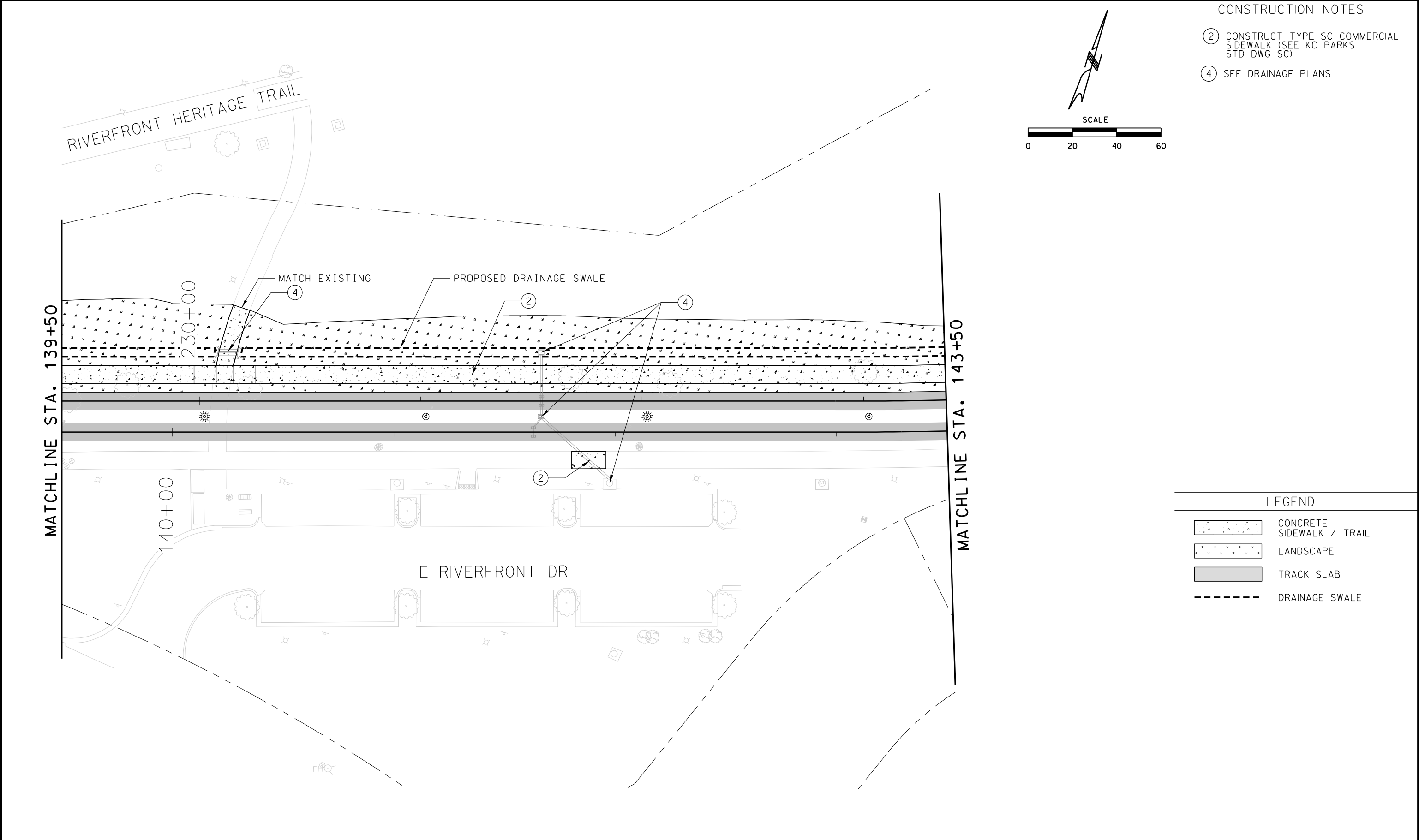
CONSTRUCTION NOTES

- 1 CONSTRUCT TYPE CG CURB/GUTTER (SEE KC PARKS STD DWG CG)
- 2 CONSTRUCT TYPE SC COMMERCIAL SIDEWALK (SEE KC PARKS STD DWG SC)
- 10 CONSTRUCT TYPE C CURB (SEE KC PARKS STD DWG C)
- 11 CONSTRUCT 10" MIN. PCCP
- 12 CONSTRUCT FLUSH RIBBON CURB (SEE CIVIL DETAILS)
- 16 INSTALL 8" GRAVEL PAVEMENT (1" BELOW ADJACENT CONCRETE)
- 17 PROTECT EXSITING UTILITY

LEGEND

- CONCRETE SIDEWALK / TRAIL
- LANDSCAPE
- TRACK SLAB
- 10" MIN. PCCP
- RED COLORED TRACK SLAB
- DRAINAGE SWALE
- GRAVEL PAVEMENT

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallafiero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION CIVIL PLAN STA 135+50 TO STA 139+50		SCALE FOR 22"x34": 1" = 20' FILENAME: C108.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: C108 SHEET NO.: 103	
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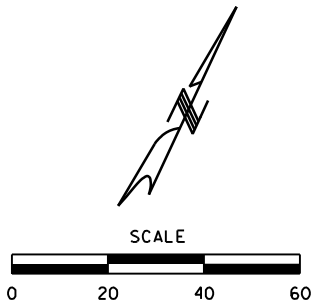
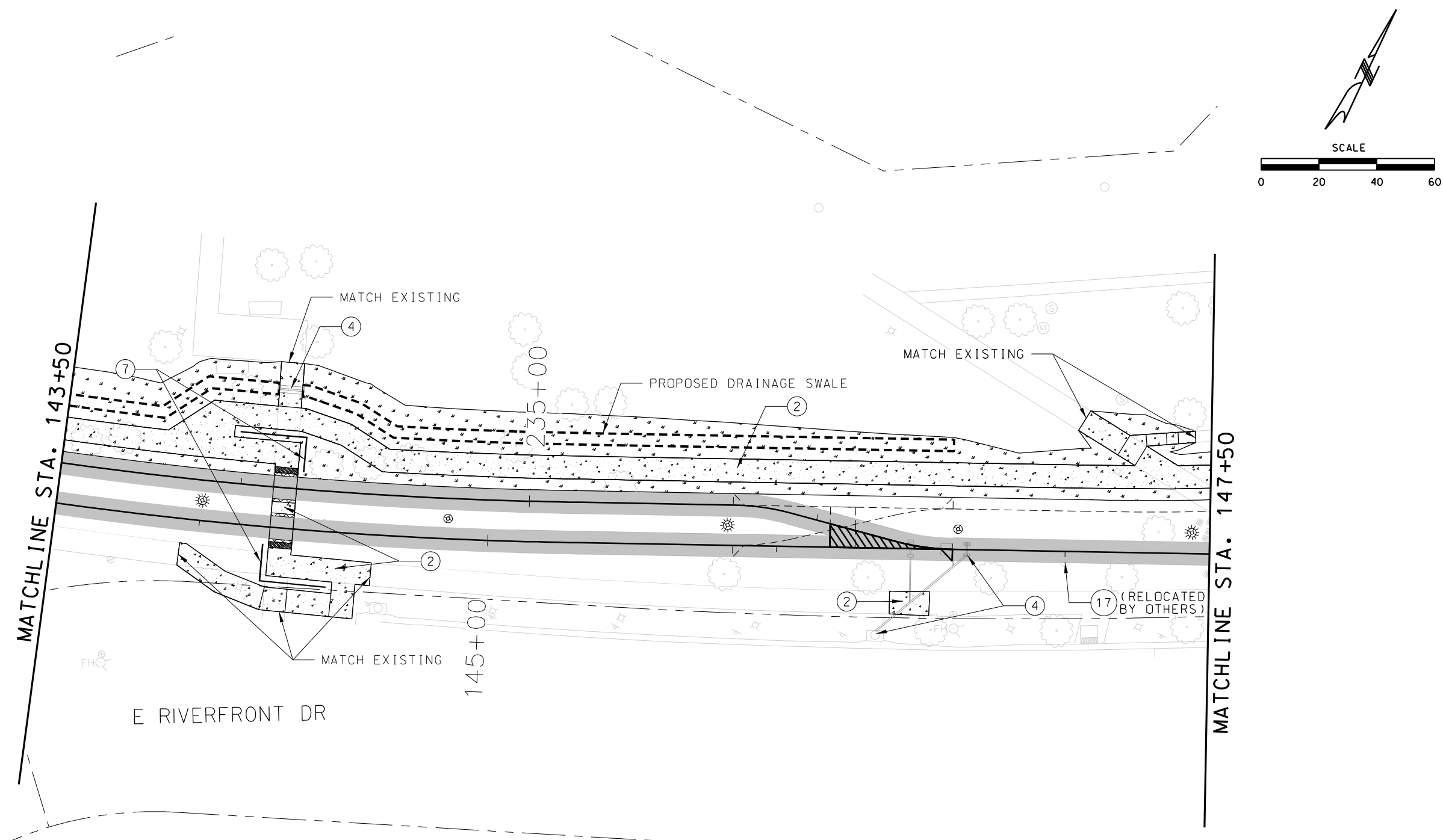
CONSTRUCTION NOTES

- ② CONSTRUCT TYPE SC COMMERCIAL SIDEWALK (SEE KC PARKS STD DWG SC)
- ④ SEE DRAINAGE PLANS

LEGEND

- CONCRETE SIDEWALK / TRAIL
- LANDSCAPE
- TRACK SLAB
- DRAINAGE SWALE

REV			DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022		HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		Tallafiero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
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PLOT DATE: 12/23/2022			9:47:43 AM	DATE	12-23-2022				NOT FOR CONSTRUCTION			CIVIL PLAN STA 139+50 TO STA 143+50					DRAWING NO.:	SHEET NO.:
																	C109	104



CONSTRUCTION NOTES

- ② CONSTRUCT CONCRETE SIDEWALK
- ④ SEE DRAINAGE PLANS
- ⑦ INSTALL POST CHAIN FENCE (SEE LANDSCAPE PLANS)
- ⑰ PROTECT EXISTING UTILITY

LEGEND

- CONCRETE SIDEWALK / TRAIL
- LANDSCAPE
- TRACK SLAB
- DRAINAGE SWALE

REV	DATE	DESCRIPTION
PLOT DATE: 12/23/2022		9:47:54 AM

DESIGNED BY	TRM
CHECKED BY	PY
DRAWN BY	DT
CHECKED BY	TRM
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID		DATE: 12-23-2022
	HDR Engineering, Inc.	
10450 Holmes Road		Tallafiero & Browne, Inc.
Suite 600		1020 E. 8th Street
Kansas City, MO 64131-3471		Kansas City, MO 64106
816-360-2700		816-283-3456
Certificate of Authority: 000856		Certificate of Authority: 000466
NOT FOR CONSTRUCTION		

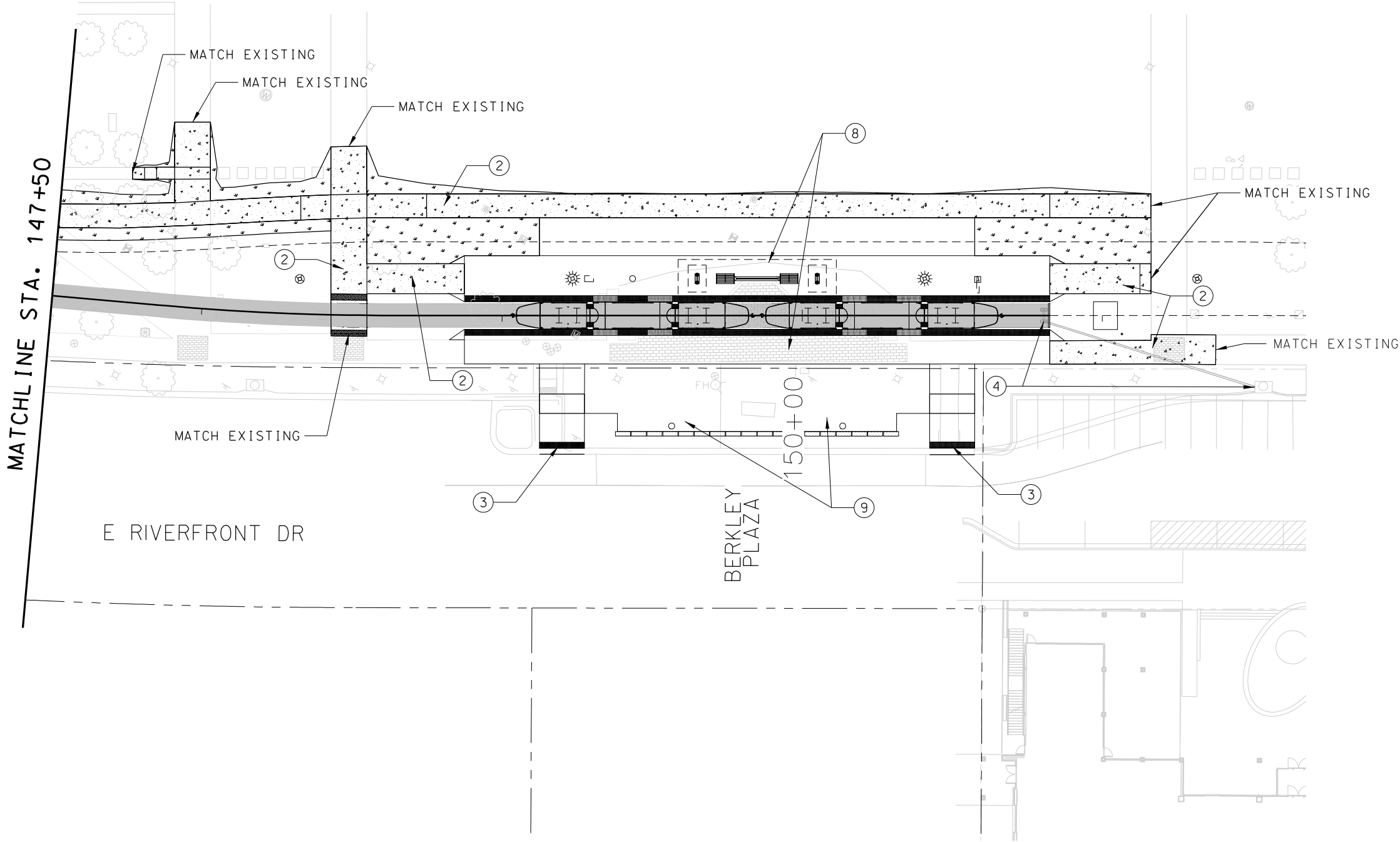
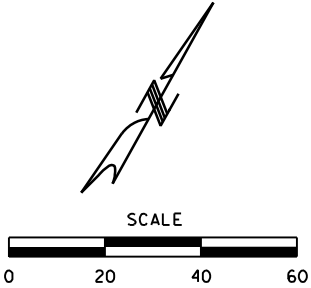
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

CIVIL PLAN
STA 143+50 TO STA 147+50

SCALE FOR 22"x34": 1" = 20'	
FILENAME: C110.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.: C110	SHEET NO.: 105

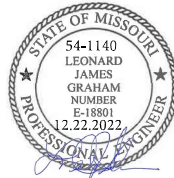
CONSTRUCTION NOTES

- 2 CONSTRUCT CONCRETE SIDEWALK
- 3 CONSTRUCT ADA CURB RAMP (SEE CIVIL DETAILS)
- 4 SEE DRAINAGE PLANS
- 8 CONSTRUCT STREETCAR STOP (SEE PLATFORM SHEETS FOR DETAILS)
- 9 SEE LANDSCAPE PLANS



LEGEND

- CONCRETE SIDEWALK / TRAIL
- LANDSCAPE
- TRACK SLAB

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallaferrero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'
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			DRAWN BY	DT			C111.dgn					
			CHECKED BY	TRM			CONTRACT NO.:					
			APPROVED BY	NKS			CONTRACT NO. ***					
PLOT DATE: 12/23/2022			9:47:57 AM			DATE	12-23-2022	NOT FOR CONSTRUCTION		CIVIL PLAN STA 147+50 TO END		VOLUME: 1
											DRAWING NO.:	SHEET NO.:
											C111	106

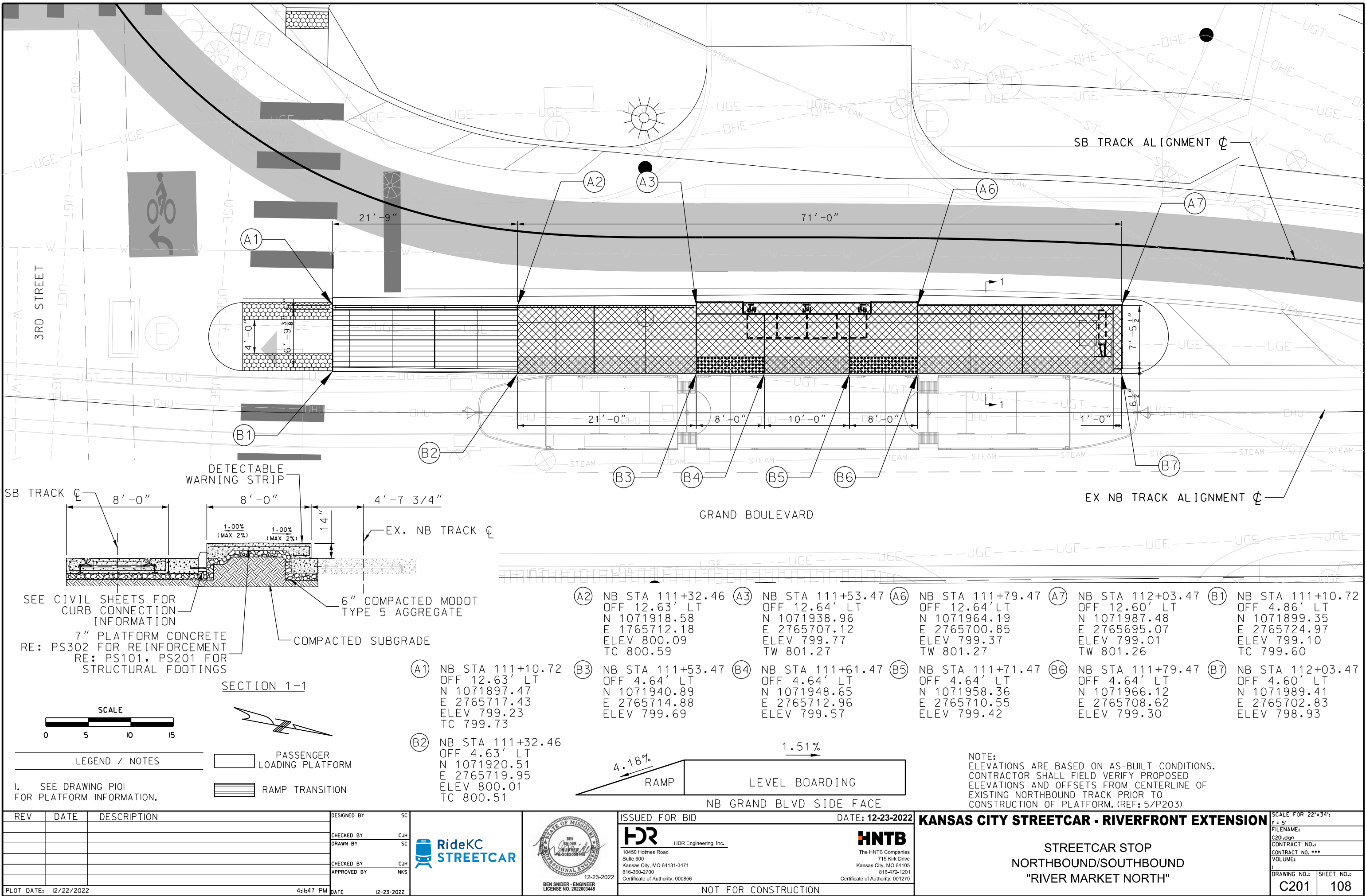
- ① CONSTRUCT TYPE SC COMMERCIAL SIDEWALK (SEE KC PARKS STD DWG SC)
- ② CONSTRUCT TYPE C CURB (SEE KC PARK STD DWG C)
- ③ CONSTRUCT HMAC FULL DEPTH
- ④ ADJUST MANHOLE TO MATCH FINISHED GRADE
- ⑤ CONSTRUCT 10" MIN. PCCP
- ⑥ RELOCATE EXISTING MANHOLE



The diagram illustrates the vertical structure of a road and its adjacent areas. From top to bottom, the layers are:

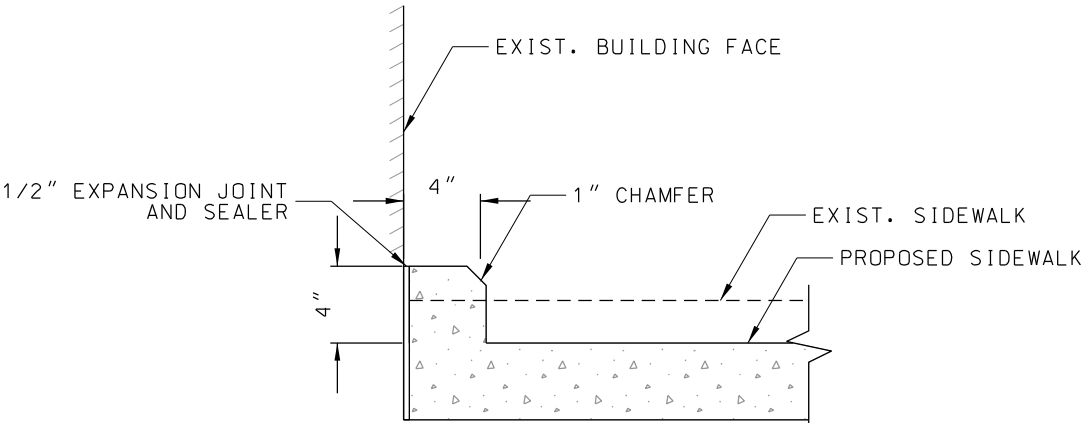
- TRACK SLAB**: A solid grey rectangular layer at the top.
- HMAC FULL DEPTH**: A layer with diagonal hatching below the track slab.
- CONCRETE SIDEWALK / TRAIL**: A layer with a pattern of small triangles below the HMAC.
- LANDSCAPE**: A layer with a pattern of small squares below the concrete.
- 10" MIN. PCCP**: A bottom layer with a cross-hatch pattern.

REV	DATE	DESCRIPTION	DESIGNED BY EJR	 	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION CIVIL PLAN 2ND STREET TO VMF	SCALE FOR 22"x34": 1" = 20'
			CHECKED BY NWH		 10450 Holmes Road Suite 500 Kansas City, MO 64131-3471 816-380-2700 Certificate of Authority: 000856	 HG CONSULT Inc 9111 NE 79th Street Kansas City, MO 64158 816-912-4723 Certificate of Authority: 2010005873		FILENAME: CH2.dgn
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			APPROVED BY NKS					VOLUME:
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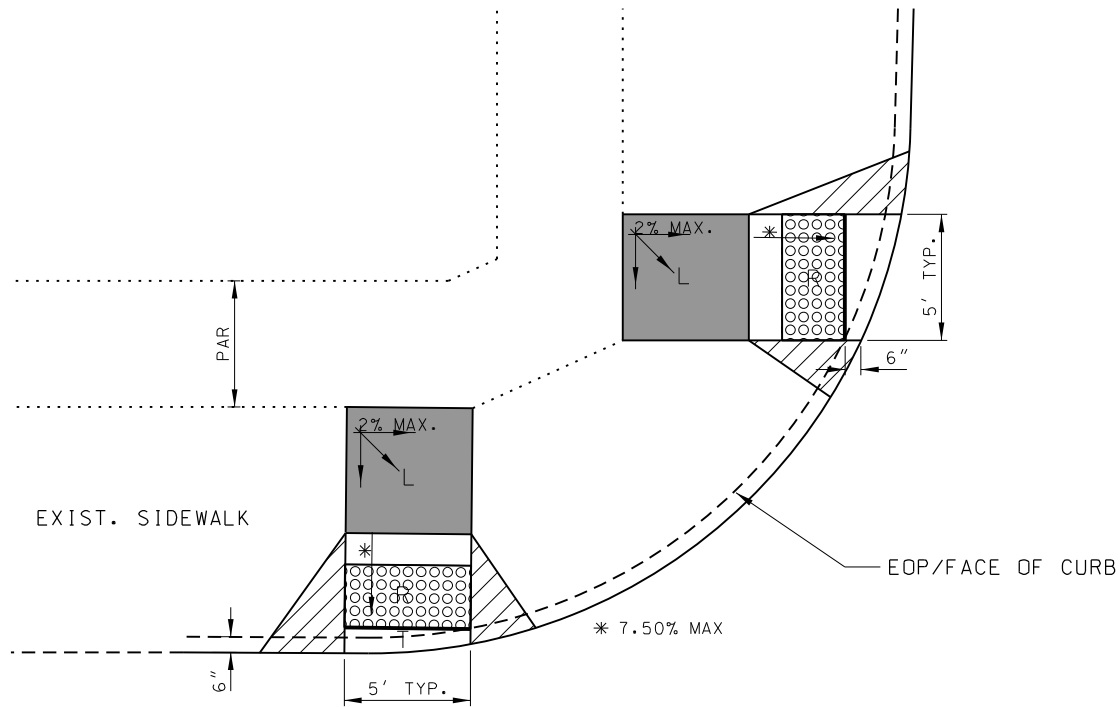
CURB RAMP GENERAL NOTES

1. CONSTRUCTION OF CURB RAMP FEATURES AND ADJACENT SIDEWALK SHALL MEET THE SCOPING AND TECHNICAL REQUIREMENTS OF THE 2010 ADA STANDARDS FOR NEWLY DESIGNED AND CONSTRUCTED OR ALTERED LOCAL GOVERNMENT FACILITIES, PUBLIC ACCOMMODATIONS, AND FACILITIES. CURB RAMPS SHALL ALSO COMPLY WITH THE PROWAG SECTIONS R302, R304, AND R305. CURB RAMPS SHALL MEET ALL ADA STANDARDS EXCEPT WHEN PROWAG REQUIREMENTS ARE MORE STRINGENT.
2. CURB RAMP, LANDING, AND TRAVELWAY/PEDESTRIAN ACCESS ROUTE (PAR) CROSS SLOPES SHALL BE CONSTRUCTED NO GREATER THAN 2.0% ABSOLUTE MAXIMUM.
3. ALL CURB RAMPS SHALL BE CONSTRUCTED A DESIRED 5-FT WIDTH. IN SOME LOCATIONS, EXISTING TOPOGRAPHY AND PROPOSED SURFACE FEATURES SUCH AS POLES LIMIT THE RAMP WIDTH TO A MINIMUM 4-FT. 4-FT RAMP WIDTHS ARE ONLY ALLOWED AT THE LOCATIONS SHOWN IN THE PLANS.
4. THE MAXIMUM ALLOWABLE CURB RAMP RUNNING SLOPE SHALL BE 7.50%. THE RUNNING SLOPE SHALL NOT REQUIRE THE RAMP LENGTH TO EXCEED 15 FEET. WHERE NECESSARY TO SLOPE THE CURB RAMP GREATER THAN 7.50% IN ORDER TO TIE INTO SIDEWALK SLOPES THAT FOLLOW THE STREET SLOPE, THE CURB RAMP SHALL BE A MINIMUM OF 16 FEET LONG. AT THESE LOCATIONS ANY ADJACENT RAMP SHALL BE SLOPED TO MINIMIZE THE SLOPE OF THE RAMP IN EXCESS OF 7.50%.
5. THE SIDEFLARE LIMITS SHOWN IN THE PLANS ARE APPROXIMATE AND SHOULD BE VERIFIED IN THE FIELD.
6. THE MAXIMUM ALLOWABLE CURB RAMP CROSS SLOPE SHALL BE 2.0%.
7. THE MAXIMUM ALLOWABLE LANDING SLOPE (ANY DIRECTION) SHALL BE 2.0%.
8. AT SOME INTERSECTION CORNERS ON THE PROJECT, THE MAXIMUM ALLOWABLE SLOPE VALUES CANNOT BE OBTAINED UNLESS THE EXISTING SIDEWALK IS LOWERED AND/OR SIDECURB IS INSTALLED ADJACENT TO FIXED FEATURES (BUILDINGS, R-12 CURB, WALLS, PARKING LOTS) AT THE RIGHT OF WAY. SEE PLANS FOR LOCATIONS OF PROPOSED SIDECURB MEASURES. LIMITS OF SIDE CURB AND SIDE CURB TRANSITIONS SHALL BE DETERMINED AND CONFIRMED IN THE FIELD BY THE ENGINEER.
9. ANY LOCATIONS WHERE CURB RAMP AND SIDEWALK FEATURES ARE NOT CONSTRUCTED TO THE PROJECT GUIDELINES, THE NON-COMPLIANT WORK SHALL BE REMOVED AND CORRECTED AT THE CONTRACTOR'S EXPENSE.
10. CURB RAMP, LANDING, AND PEDESTRIAN ACCESS ROUTE (PAR) CROSS SLOPES SHALL BE CONSTRUCTED TO DRAIN TOWARDS THE STREET, UNLESS OTHERWISE SHOWN ON THE PLANS.
11. THE CONTRACTOR SHALL CONSTRUCT ALL IMPROVEMENTS SUCH THAT THE VERTICAL ELEVATION DIFFERENCE BETWEEN CONCRETE PANELS OR BRICK PAVERS IS LESS THAN 1/4".
12. HYDRANTS, UTILITY POLES, AND OTHER VERTICAL UTILITY FEATURES SHALL NOT BE LOCATED IN CURB RAMPS OR IN LANDINGS, BUT MAY BE LOCATED WITHIN A CURB RAMP SIDE FLARE.
13. BEFORE CONSTRUCTION OF CURB RAMPS, THE CONTRACTOR SHALL REVIEW EACH INTERSECTION CORNER FOR EXISTING INLETS (TO REMAIN) ADJACENT TO PROPOSED CURB RAMPS. IN MANY INSTANCES, THE INLET UPSTREAM/DOWNSTREAM THROAT TRANSITION MAY REQUIRE ASPHALT PAVEMENT WEDGING TO PROVIDE THE REQUIRED CROSS SLOPE IN THE STREET AT THE BASE OF THE CURB RAMP.
14. THE LIMITS OF CONSTRUCTION SHOWN AT EACH INTERSECTION CORNER HAVE BEEN ESTABLISHED BASED ON THE SURVEY INFORMATION AND EXISTING SIDEWALK ELEVATIONS AND JOINTS AVAILABLE DURING THE DESIGN PHASE. TIE IN LOCATIONS TO SIDESTREET AND MAINLINE SIDEWALKS MAY REQUIRE FIELD ADJUSTMENTS IF SITE CONDITIONS WARRANT TIE IN AT A MORE DESIRABLE LOCATION FOR A SMOOTH TRANSITION TO EXISTING SIDEWALK.
15. ALL SURFACE UTILITY FEATURES WITHIN THE LIMITS OF THE NEW CURB RAMPS (SUCH AS WATER METERS, GAS VALVES, LIGHTING AND SIGNAL PULL BOXES, MANHOLES) SHALL BE ADJUSTED TO THE PROPOSED SIDEWALK AND RAMP GRADES.
16. ALL POINTS SHOWN ON THE INTERSECTION CORNER DETAIL SHEETS ARE AS FOLLOWS:
CURB RETURN POINTS - ELEVATION = EDGE OF PAVEMENT
SIDEWALK/RAMP POINTS - ELEVATION = TOP OF SIDEWALK/RAMP
17. CONTRACTOR SHALL STOCKPILE AND USE THE EXISTING SIDEWALK BRICKS/PAVERS FOR TRANSITION AREAS AND SIDEWALK RESTORATION AS DIRECTED BY THE CONSTRUCTION ENGINEER.
18. THE CONTRACTOR SHALL INFORM THE ENGINEER IF SITE CONDITIONS ARE ENCOUNTERED THAT PROHIBIT CONSTRUCTION OF THE CURB RAMP LAYOUT SHOWN IN THE PLANS. NOTIFICATION SHALL BE MADE PRIOR TO PLACEMENT OF CONCRETE.
19. ALL SIDEWALK AND SIDEWALK RAMP CONSTRUCTION SHALL FOLLOW THE KCMO STANDARD DETAILS FOR CONCRETE THICKNESS, JOINTING, AND CURB TRANSITIONS.
20. CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING THE EXISTING UTILITY FEATURES SUCH AS MANHOLES, VALVES, PULL BOXES, ETC AND MAKING THE PROPER ELEVATION ADJUSTMENTS REQUIRED BY THE ADA CURB RAMP CONSTRUCTION.
21. CONTRACTOR TO MAINTAIN ADA COMPLIANT PATH THROUGH DRIVEWAYS. REFER TO KCMO DRIVEWAY DETAILS.

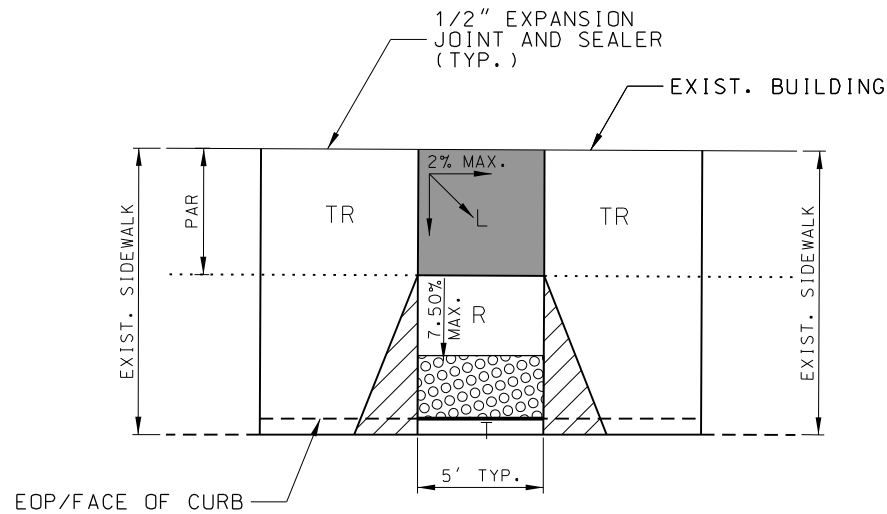


SIDE CURB ALONG BUILDING FACE DETAIL

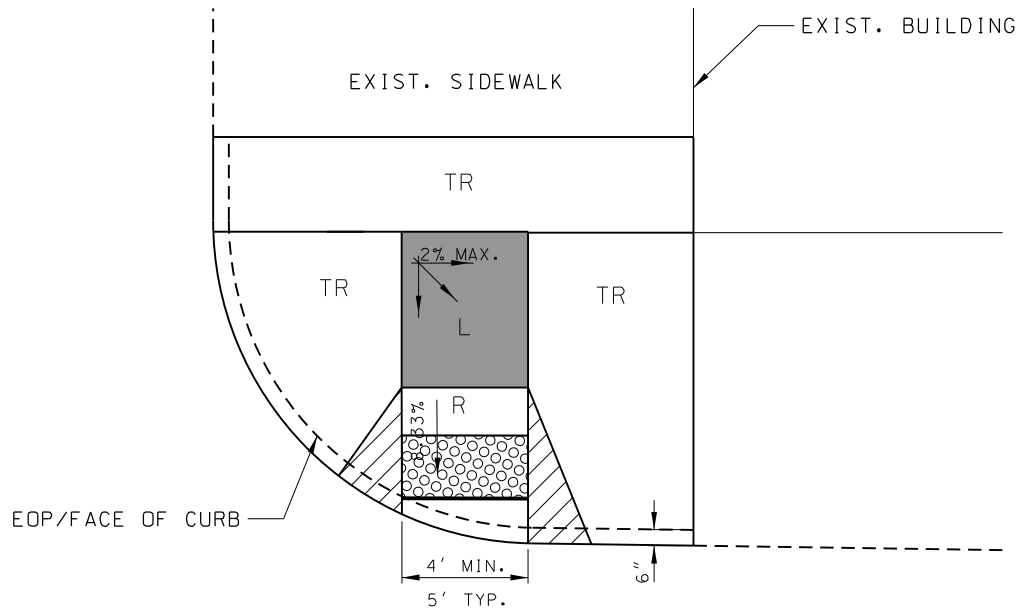
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			CHECKED BY	PY									FILENAME:				
			DRAWN BY	LG									CONTRACT NO.:				
			CHECKED BY	MM									CONTRACT NO. ***				
			APPROVED BY	NKS									VOLUME:				
PLOT DATE: 12/23/2022			9:52:25 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION						DRAWING NO.:	SHEET NO.:			
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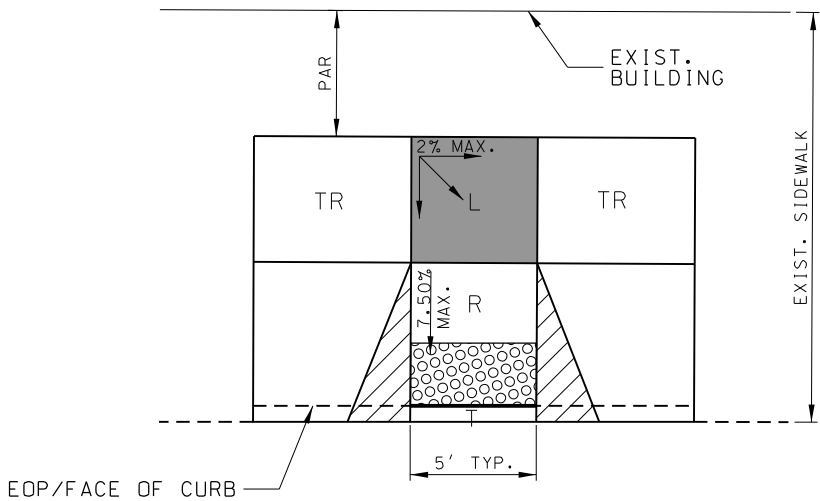
INTERSECTION CORNER - CURB RAMP DETAIL 4



INTERSECTION CORNER - CURB RAMP DETAIL 5

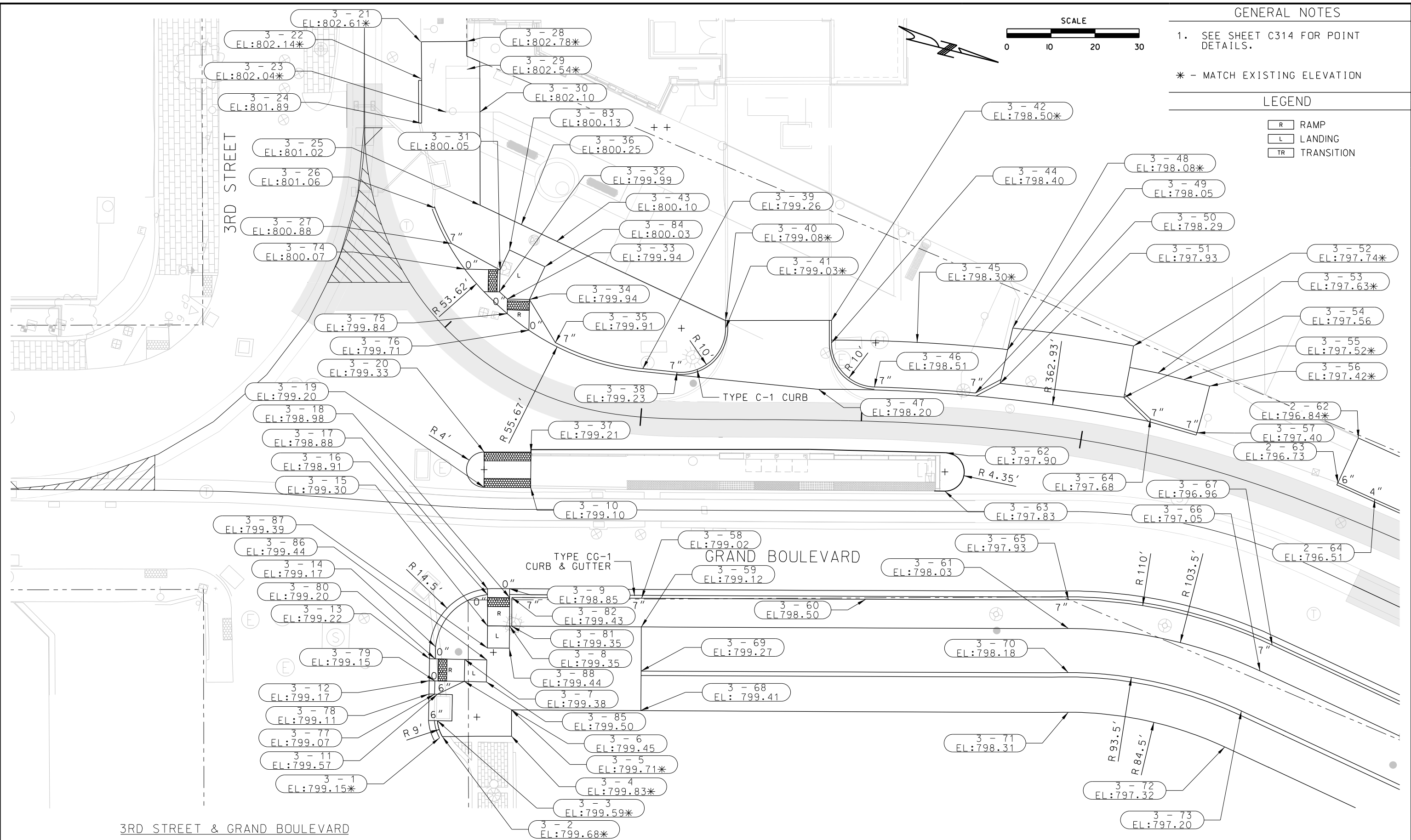


INTERSECTION CORNER - CURB RAMP DETAIL 5



INTERSECTION CORNER - CURB RAMP DETAIL 6

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			DRAWN BY	LG										
			CHECKED BY	MM										
			APPROVED BY	NKS										
PLOT DATE: 12/23/2022			9:52:30 AM		DATE		12-23-2022		NOT FOR CONSTRUCTION				DRAWING NO.:	SHEET NO.:
													C303	112



GENERAL NOTES

1. SEE SHEET C314 FOR POINT DETAILS.

* - MATCH EXISTING ELEVATION

LEGEND

R

RAMP

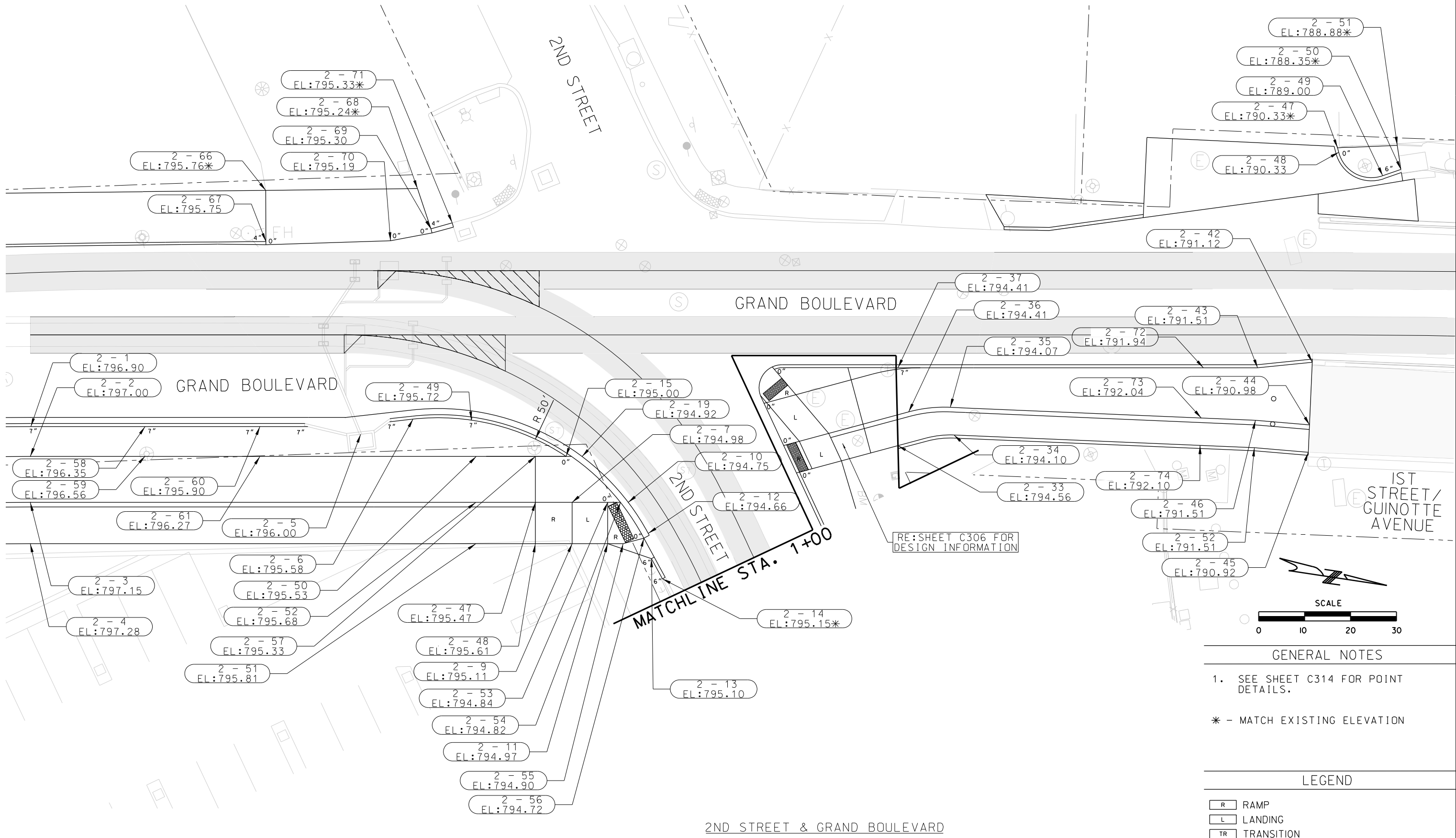
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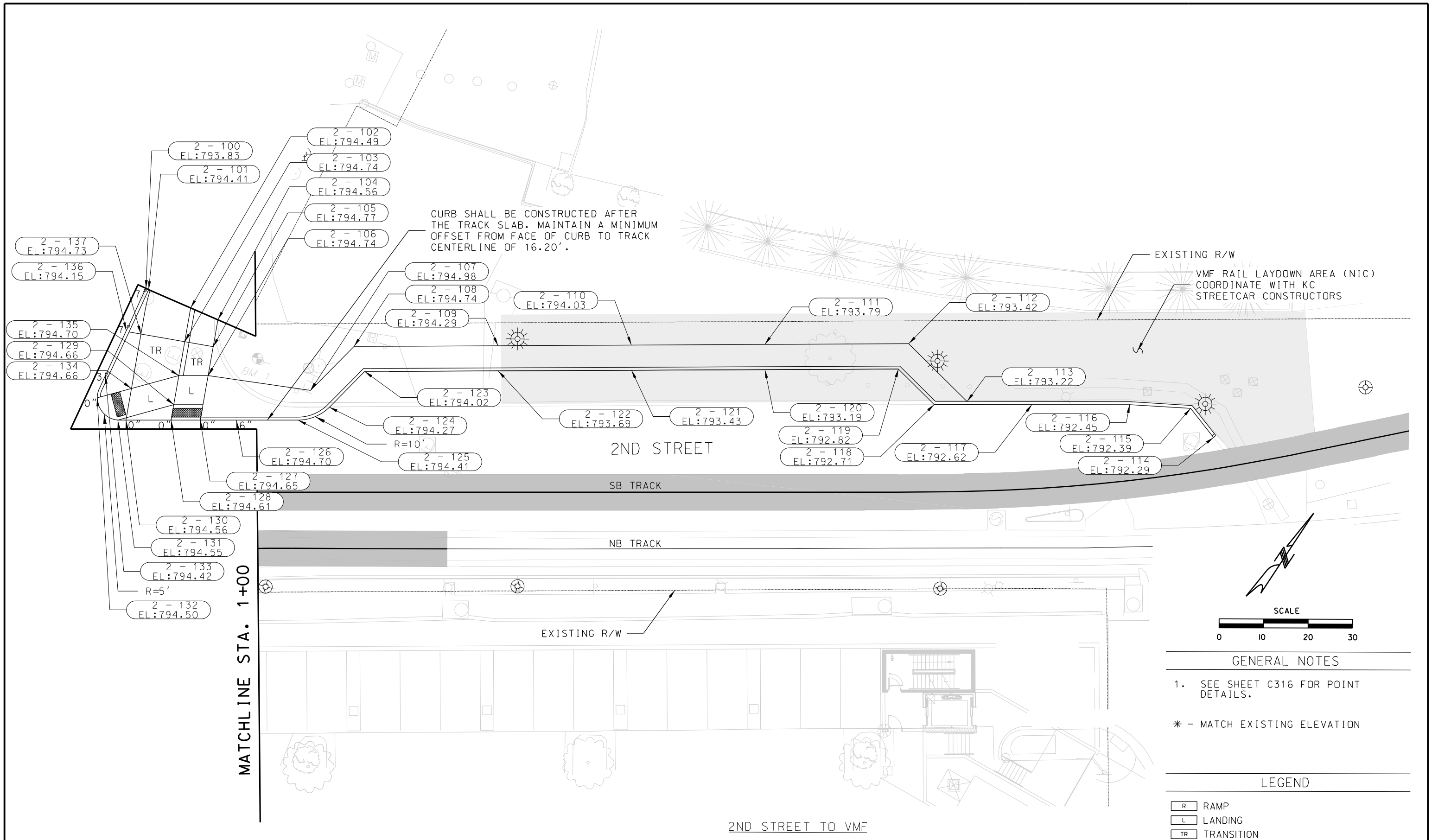
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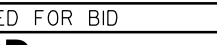
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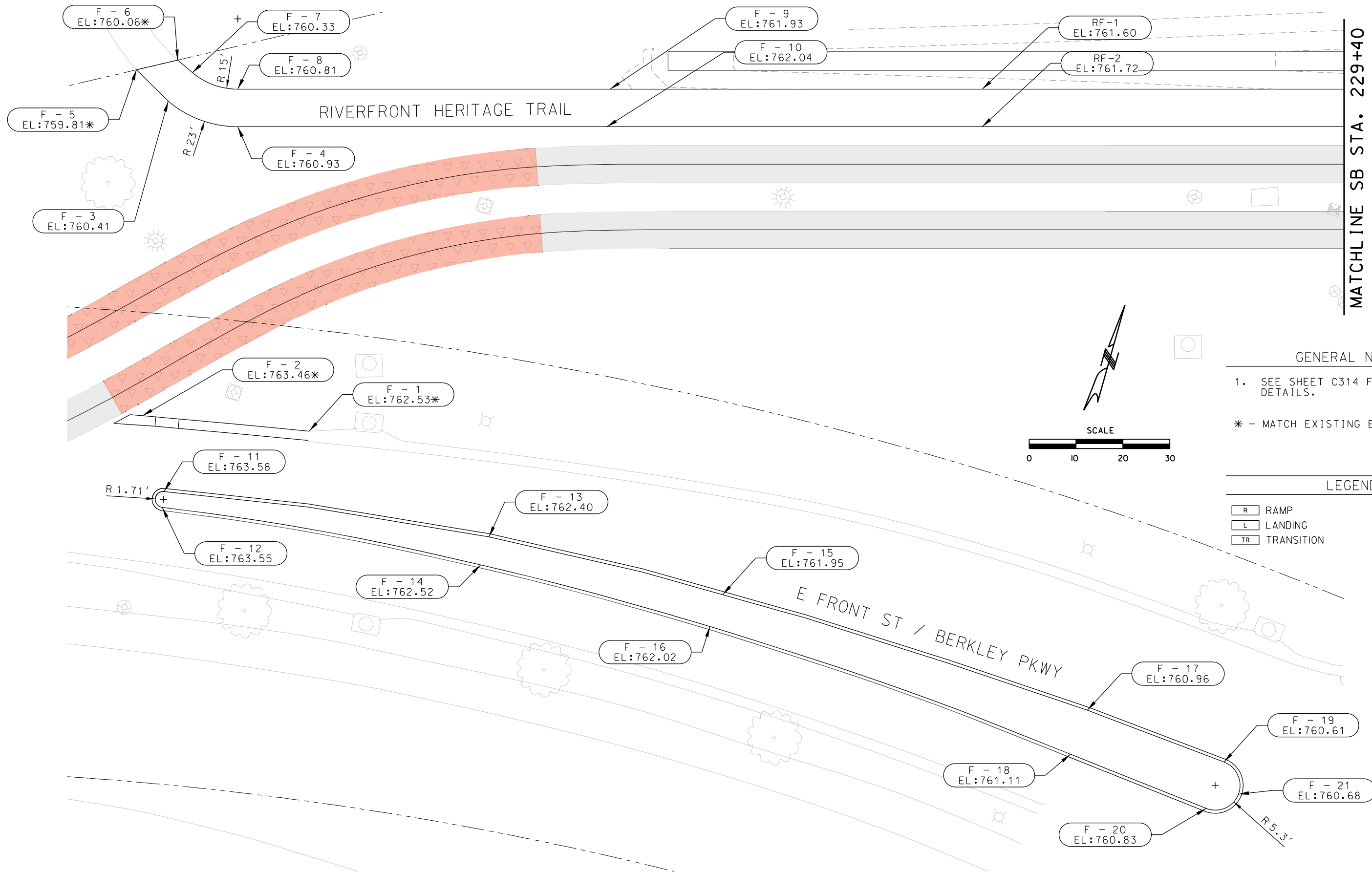
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									CHECKED BY			PY												HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856												Tallaferrero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466					
									DRAWN BY			DT																													
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																																				C304			113		



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REV		DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": Ht/P = 10	
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GENERAL NOTES

1. SEE SHEET C314 FOR POINT DETAILS.

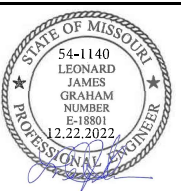
* - MATCH EXISTING ELEVATION

LEGEND

R RAMP
L LANDING
TR TRANSITION

REV	DATE	DESCRIPTION

DESIGNED BY	TRM
CHECKED BY	PY
DRAWN BY	DT
CHECKED BY	TRM
APPROVED BY	NKS



ISSUED FOR BID

DATE: 12-23-2022

HDR
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

T&B
Tallaferrero & Browne, Inc.
1020 E. 8th Street
Kansas City, MO 64106
816-283-3456
Certificate of Authority: 000466

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

GRADING LAYOUT PLANS
BERKLEY PARKWAY

SCALE FOR 22"x34": 1" = 10'	
FILENAME: C307.dgn	
CONTRACT NO.: ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
C307	116

GENERAL NOTES

1. SEE SHEET C315 FOR POINT DETAILS.

* - MATCH EXISTING ELEVATION

LEGEND

- R RAMP
- L LANDING
- TR TRANSITION

SCALE



MATCHLINE SB STA. 229+40

MATCHLINE SB STA. 232+20

RF-57
EL: 761.63*

RF-62
EL: 761.50*

RF-58
EL: 760.55

RF-63
EL: 760.47

RF-3
EL: 759.46

RF-59
EL: 760.26

RF-64
EL: 759.97

RF-4
EL: 759.58

RF-60
EL: 760.38

RF-65
EL: 760.09

RIVERFRONT HERITAGE TRAIL

RF-61
EL: 760.67

RF-66
EL: 760.59

E RIVERFRONT DR

REV	DATE	DESCRIPTION

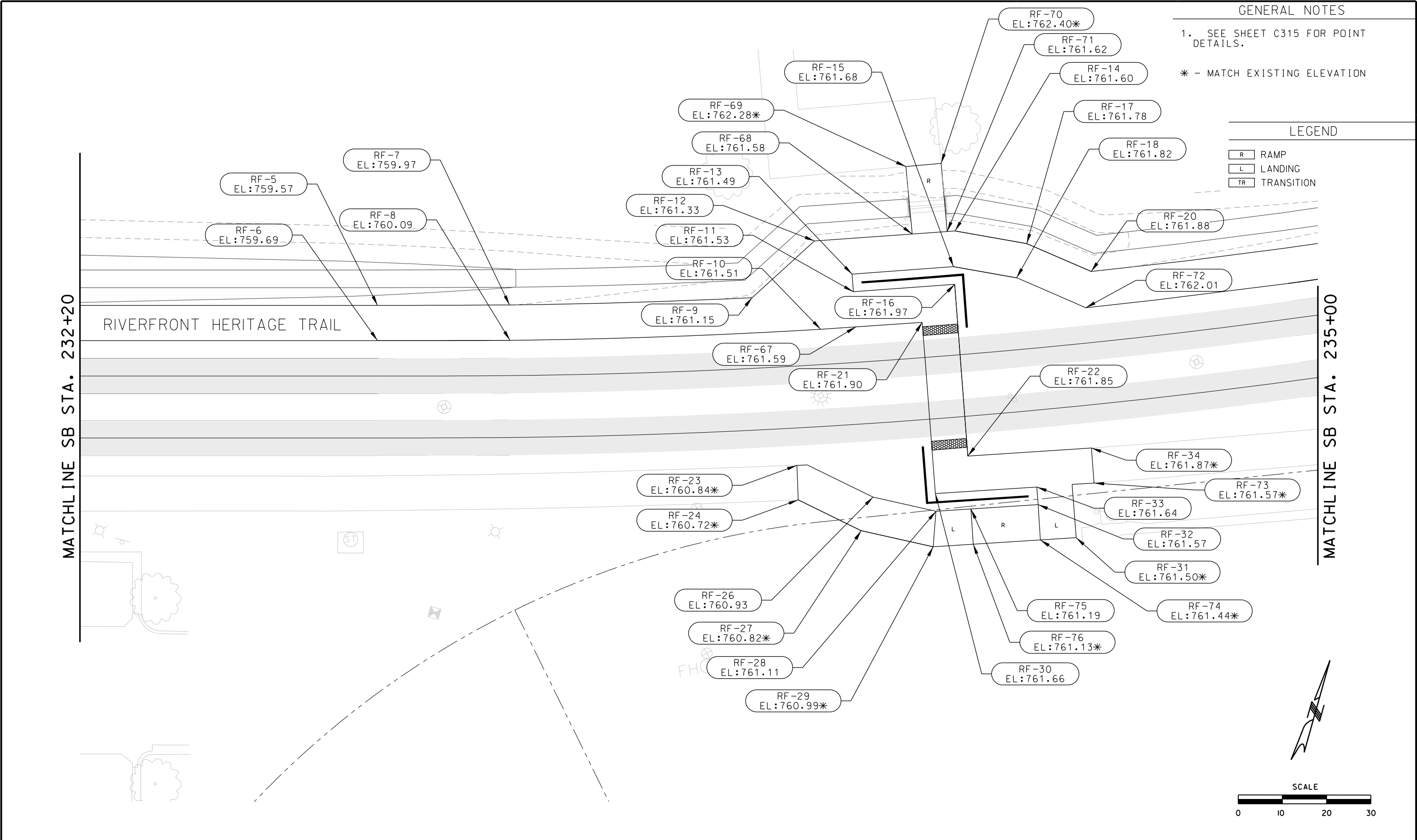
DESIGNED BY	TRM
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APPROVED BY	NKS



ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	Tallaferrro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
GRADING LAYOUT PLANS NB SB TRACKS	

SCALE FOR 22"x34": 1" = 10'	
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CONTRACT NO.: CONTRACT NO. ***	
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DRAWING NO.: C308	SHEET NO.: 117



REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": 1" = 10'	
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			APPROVED BY	NKS							DRAWING NO.: C309		SHEET NO.: 118			
PLOT DATE: 12/23/2022			9:54:18 AM		DATE	12-23-2022		NOT FOR CONSTRUCTION								

GENERAL NOTES

1. SEE SHEET C315 FOR POINT DETAILS.

* - MATCH EXISTING ELEVATION

LEGEND

R

RAMP

L

LANDING

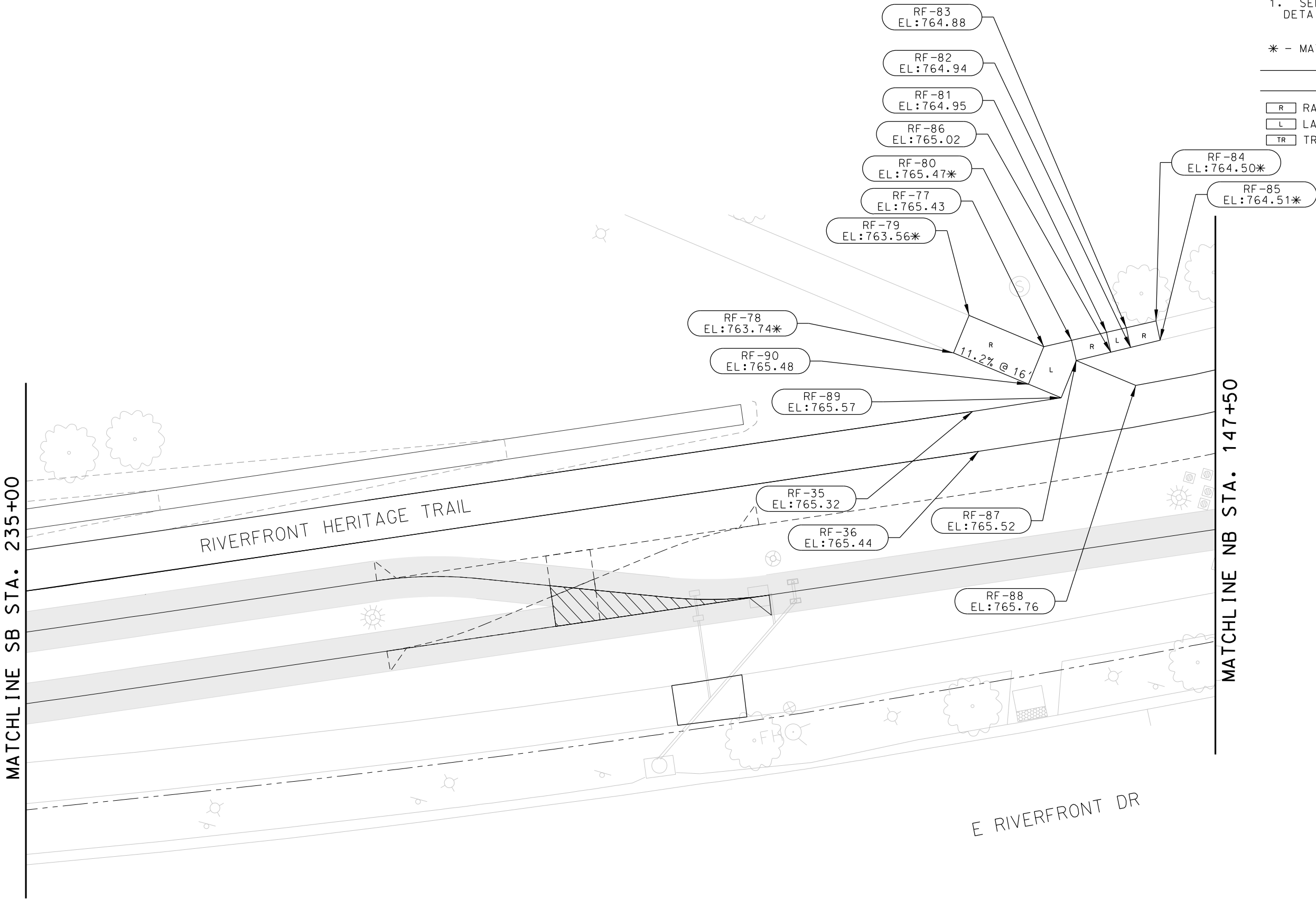
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TRANSITION



SCALE





REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 10'	
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PLOT DATE: 12/23/2022			9:54:21 AM		DATE 12-23-2022		NOT FOR CONSTRUCTION							

GENERAL NOTES

1. SEE SHEET C315 FOR POINT DETAILS.

* - MATCH EXISTING ELEVATION

LEGEND

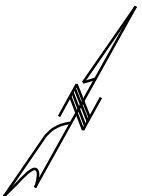
- R

RAMP
- L

LANDING
- TR

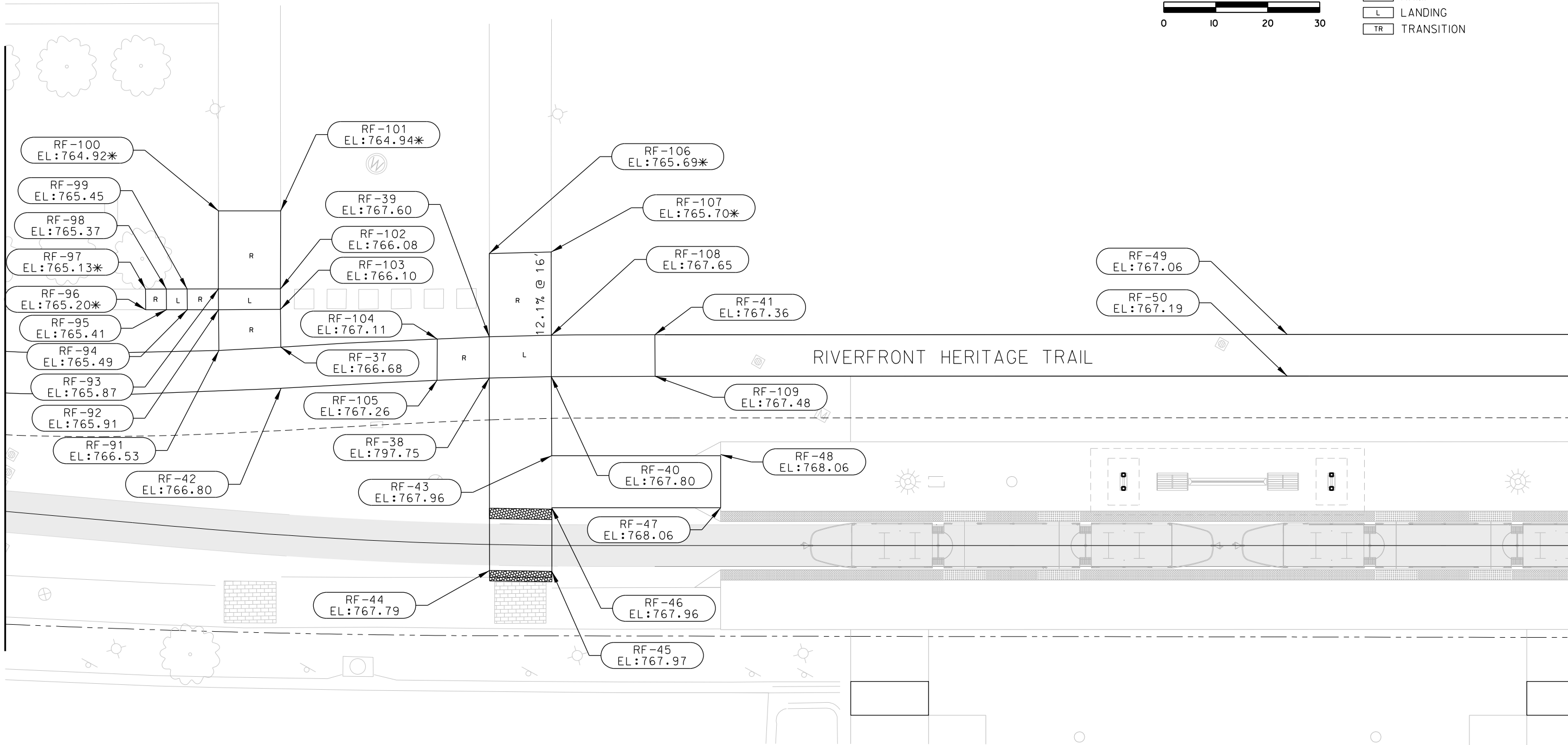
TRANSITION

SCALE



MATCHLINE NB STA. 147+50

MATCHLINE NB STA. 150+50



E RIVERFRONT DR

REV	DATE	DESCRIPTION
PLOT DATE: 12/23/2022		9:54:24 AM

DESIGNED BY	TRM
CHECKED BY	PY
DRAWN BY	DT
CHECKED BY	TRM
APPROVED BY	NKS
DATE	12-23-2022

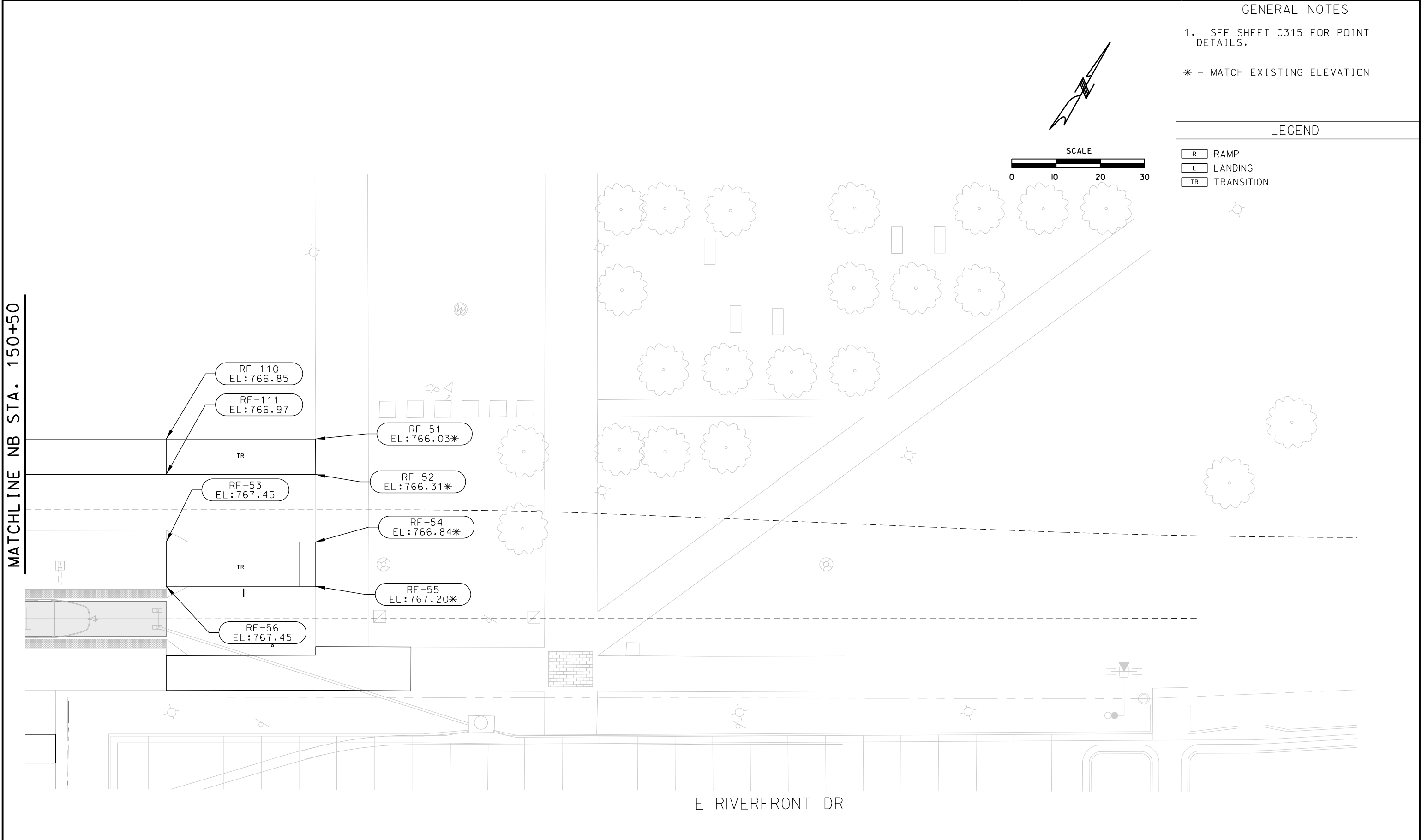


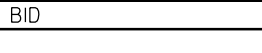
ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	Tallafiero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466
NOT FOR CONSTRUCTION	

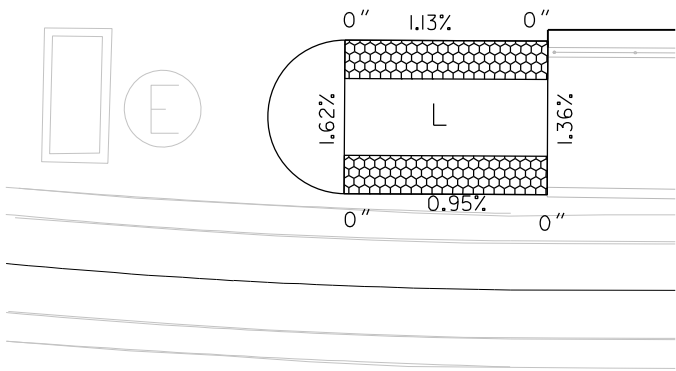
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

GRADING LAYOUT PLANS
NB SB TRACKS

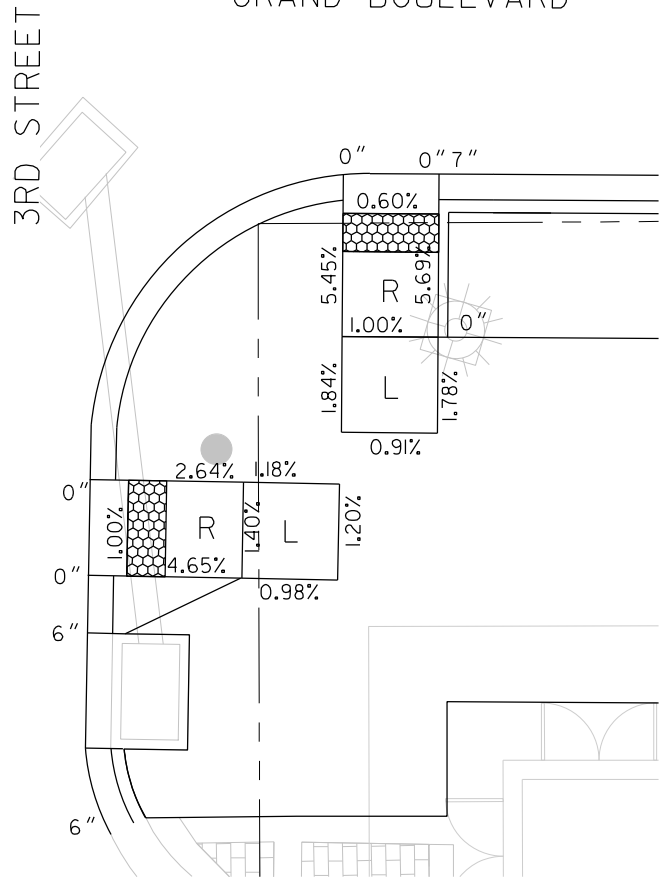
SCALE FOR 22"x34": 1" = 10'	
FILENAME: C31L.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.: C311	SHEET NO.: 120



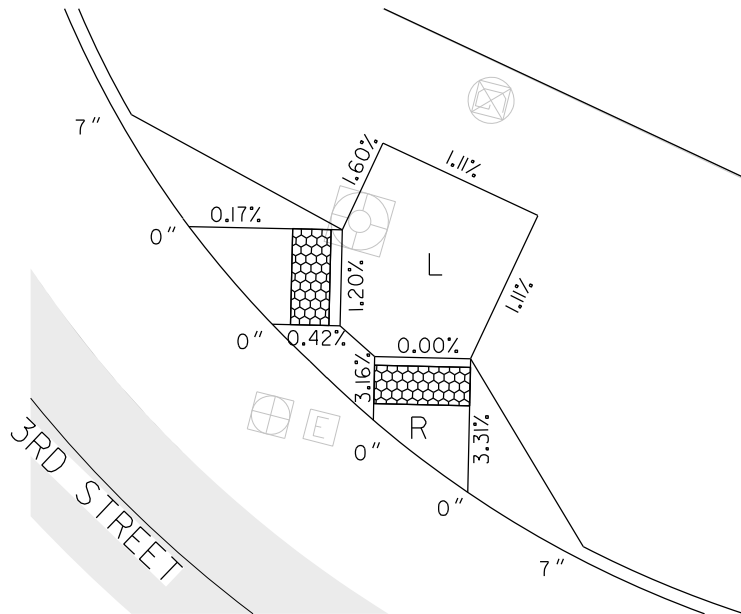
REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallaferrero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 10'		
			CHECKED BY	PY			FILENAME:							
			DRAWN BY	DT			CONTRACT NO.:							
			CHECKED BY	TRM			CONTRACT NO. ***							
			APPROVED BY	NKS			VOLUME:							
PLOT DATE: 12/23/2022			9:54:27 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION				GRADING LAYOUT PLANS NB SB TRACKS		DRAWING NO.:	SHEET NO.:
											C312		121	



GRAND BOULEVARD



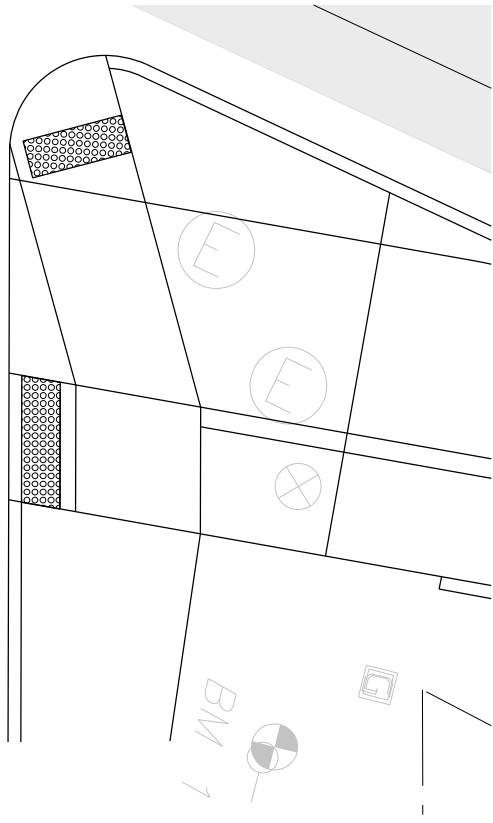
NE CORNER 3RD ST & GRAND BLVD
SEE C304 FOR POINTS.



NW CORNER 3RD ST & GRAND BLVD
SEE C304 FOR POINTS.



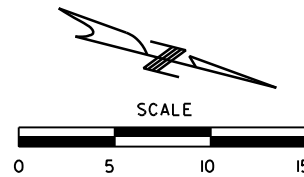
2ND ST & GRAND BLVD
SEE C305 FOR POINTS.



RE: SHEET C306
FOR DESIGN
INFORMATION

GENERAL NOTES

1. SEE SHEET C315 FOR POINT DETAILS.



LEGEND

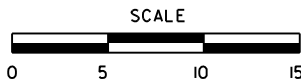
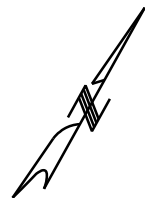
- R RAMP
- L LANDING
- TR TRANSITION

REV	DATE	DESCRIPTION	DESIGNED BY	TRM					ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": Ht P = 5' FILENAME: C313.dgn CONTRACT NO.: CONTRACT NO.: *** VOLUME: DRAWING NO.: SHEET NO.: C313 122	
			CHECKED BY	PY												
			DRAWN BY	DT												
			CHECKED BY	TRM												
			APPROVED BY	NKS												
PLOT DATE: 12/23/2022			9:54:31 AM		DATE		12-23-2022		NOT FOR CONSTRUCTION				ADA RAMP AND DETAILS PLAN 1			

GENERAL NOTES

1. SEE SHEET C315 FOR POINT DETAILS.

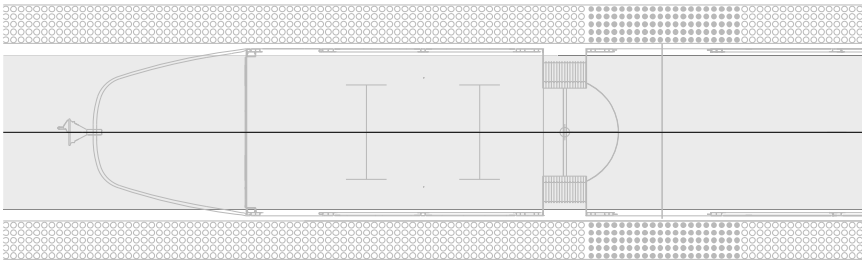
* - MATCH EXISTING ELEVATION



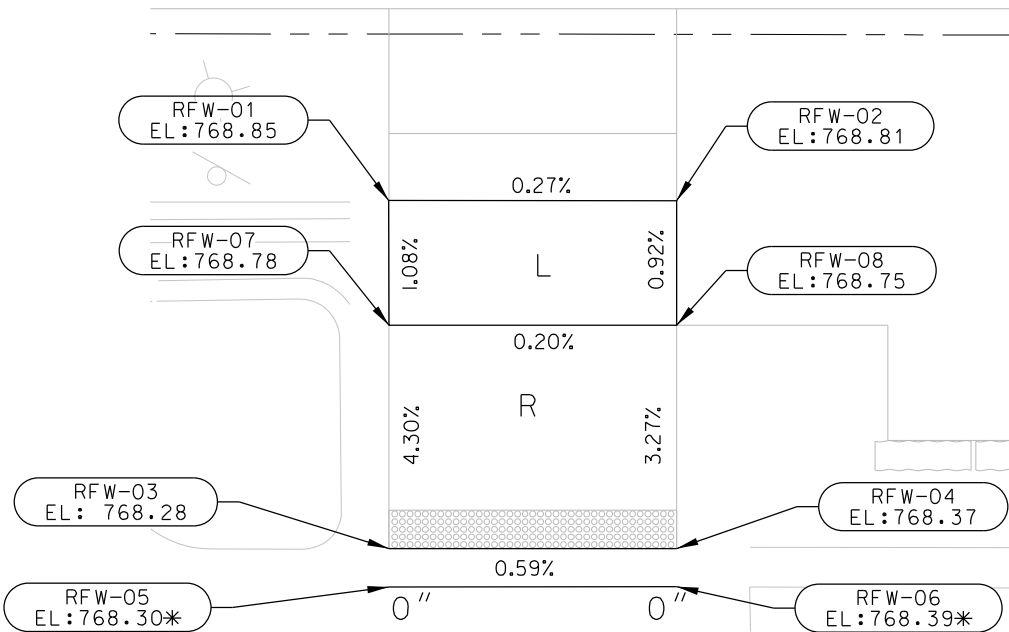
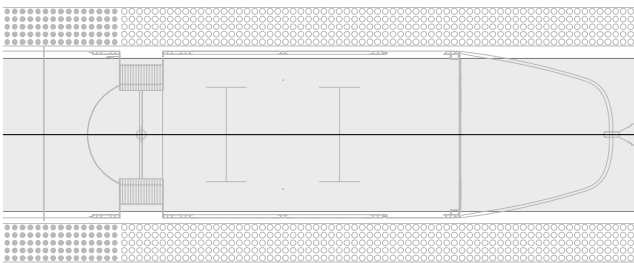
LEGEND

- R RAMP
- L LANDING
- TR TRANSITION

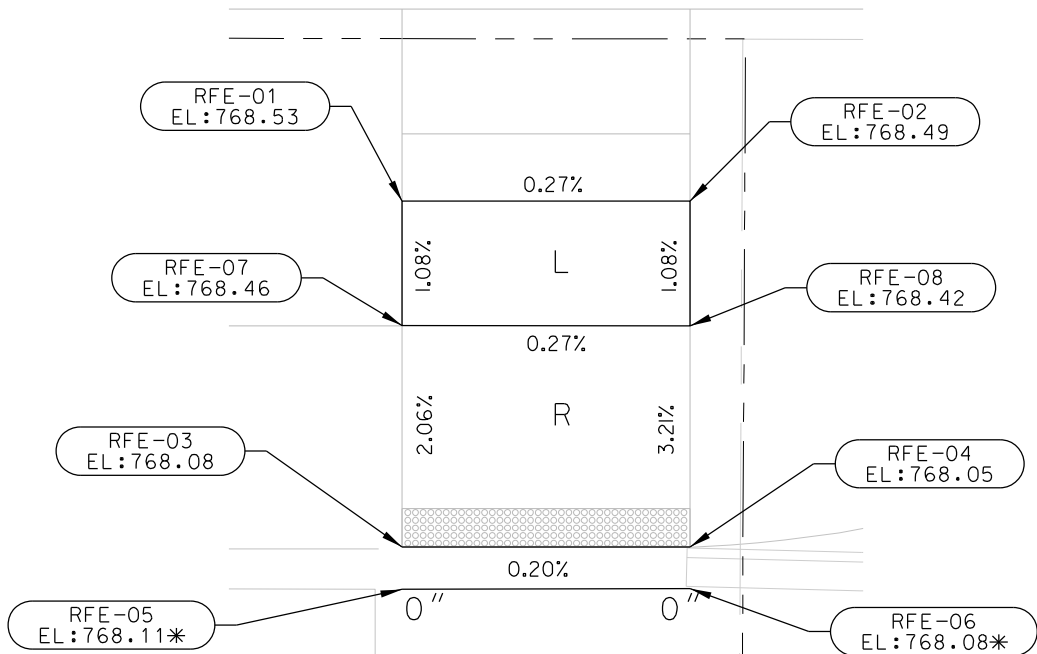
RIVERFRONT PLATFORM



RIVERFRONT PLATFORM



RIVERFRONT DRIVE WEST



RIVERFRONT DRIVE EAST

REV	DATE	DESCRIPTION	DESIGNED BY	TRM			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallaferrro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": Ht P = 5' FILENAME: C314.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.:				
			CHECKED BY	PY												
			DRAWN BY	DT												
			CHECKED BY	TRM												
			APPROVED BY	NKS												
PLOT DATE: 12/23/2022			9:54:54 AM		DATE		12-23-2022		NOT FOR CONSTRUCTION		ADA RAMP AND DETAILS PLAN 2					
											C314					
											123					

3RD STREET & GRAND BOULEVARD		
3-1	1071893.29	2765784.98
3-2	1071893.82	2765784.57
3-3	1071891.84	2765781.35
3-4	1071909.01	2765780.63
3-5	1071907.54	2765774.84
3-6	1071895.59	2765771.23
3-7	1071894.45	2765766.36
3-8	1071902.41	2765756.53
3-9	1071900.37	2765748.28
3-10	1071899.32	2765724.87
3-11	1071890.40	2765775.53
3-12	1071887.82	2765773.05
3-13	1071886.64	2765768.19
3-14	1071887.34	2765765.21
3-15	1071897.56	2765757.73
3-16	1071895.85	2765750.85
3-17	1071895.53	2765749.55
3-18	1071900.88	2765750.30
3-19	1071889.06	2765727.42
3-20	1071887.13	2765719.65
3-21	1071850.27	2765633.01
3-22	1071852.35	2765641.08
3-23	1071859.78	2765647.08
3-24	1071854.88	2765650.89
3-25	1071872.50	2765665.65
3-26	1071862.48	2765668.46
3-27	1071868.31	2765675.65
3-28	1071860.36	2765630.39
3-29	1071861.98	2765636.50
3-30	1071867.21	2765645.17
3-31	1071880.44	2765678.75
3-32	1071881.57	2765683.63
3-33	1071883.71	2765684.74
3-34	1071888.59	2765683.61
3-35	1071896.68	2765691.65
3-36	1071882.59	2765667.60
3-37	1071897.39	2765717.11
3-38	1071925.05	2765691.34
3-39	1071917.33	2765692.49
3-40	1071932.83	2765677.29
3-41	1071933.26	2765678.98
3-42	1071956.09	2765671.36
3-43	1071891.33	2765669.29
3-44	1071957.35	2765676.30
3-45	1071976.13	2765671.40
3-46	1071969.23	2765683.59
3-47	1071957.11	2765687.22
3-48	1071996.34	2765662.93
3-49	1071996.46	2765667.95
3-50	1071991.78	2765679.27
3-51	1071996.65	2765675.77
3-52	1072023.91	2765660.10
3-53	1072030.78	2765664.69
3-54	1072024.65	2765671.98
3-55	1072036.81	2765664.69
3-56	1072042.85	2765664.69
3-57	1072042.67	2765675.64
3-58	1071929.88	2765743.03

3RD STREET & GRAND BOULEVARD (CONT.)		
3-59	1071931.44	2765749.34
3-60	1071979.16	2765730.77
3-61	1072025.34	2765725.85
3-62	1071988.52	2765694.09
3-63	1071990.53	2765702.56
3-64	1072031.68	2765675.23
3-65	1072023.76	2765719.54
3-66	1072069.82	2765724.50
3-67	1072071.03	2765718.11
3-68	1071936.01	2765767.79
3-69	1071933.84	2765759.05
3-70	1072028.06	2765735.47
3-71	1072030.23	2765744.21
3-72	1072066.30	2765743.17
3-73	1072067.97	2765734.32
3-74	1071872.65	2765680.55
3-75	1071884.46	2765687.96
3-76	1071890.15	2765690.41
3-77	1071889.77	2765775.68
3-78	1071888.51	2765775.97
3-79	1071889.09	2765772.75
3-80	1071887.96	2765767.88
3-81	1071902.90	2765756.41
3-82	1071901.34	2765750.10
3-83	1071881.39	2765673.85
3-84	1071890.13	2765675.53
3-85	1071900.46	2765770.09
3-86	1071899.32	2765765.22
3-87	1071898.76	2765762.59
3-88	1071903.62	2765761.39

FRONT STREET		
F-1	1073858.85	2767091.72
F-2	1073852.42	2767056.59
F-3	1073918.52	2767043.72
F-4	1073917.28	2767059.52
F-5	1073923.13	2767035.41
F-6	1073927.49	2767043.33
F-7	1073925.79	2767047.05
F-8	1073924.98	2767057.36
F-9	1073946.45	2767133.80
F-10	1073938.55	2767135.34
F-11	1073838.09	2767065.39
F-12	1073834.71	2767065.46
F-13	1073847.53	2767134.76
F-14	1073841.29	2767134.65
F-15	1073849.11	2767186.06
F-16	1073841.84	2767185.29
F-17	1073846.41	2767267.63
F-18	1073836.39	2767266.73
F-19	1073843.53	2767299.36
F-20	1073833.08	2767297.73
F-21	1073837.86	2767303.51

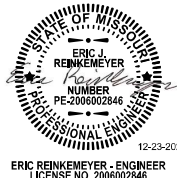
2ND STREET & GRAND BOULEVARD		
2-1	1072081.83	2765720.14
2-2	1072080.63	2765726.53
2-3	1072078.63	2765736.33
2-4	1072077.14	2765745.20
2-5	1072152.08	2765735.29
2-6	1072163.91	2765734.21
2-7	1072194.53	2765758.54
2-8	NOT USED	
2-9	1072192.84	2765767.38
2-10	1072206.55	2765760.84
2-11	1072200.45	2765768.84
2-12	1072209.57	2765768.30
2-13	1072209.22	2765773.83
2-14	1072210.72	2765778.59
2-15	1072195.15	2765748.48
2-16	NOT USED	
2-17	NOT USED	
2-18	NOT USED	
2-19	1072198.54	2765749.13
2-20	NOT USED	
2-21	NOT USED	
2-22	NOT USED	
2-23	NOT USED	
2-24	NOT USED	
2-25	NOT USED	
2-26	NOT USED	
2-27	NOT USED	
2-28	NOT USED	
2-29	NOT USED	
2-30	NOT USED	
2-31	NOT USED	
2-32	NOT USED	
2-33	1072266.58	2765759.76
2-34	1072278.99	2765759.78
2-35	1072279.35	2765753.70
2-36	1072270.26	2765752.98
2-37	1072219.12	2765734.81
2-38	NOT USED	
2-39	NOT USED	
2-40	NOT USED	
2-41	1072246.86	2765744.67
2-42	1072358.63	2765758.88
2-43	1072346.73	2765757.85
2-44	1072355.48	2765772.18
2-45	1072354.10	2765777.53
2-46	1072344.10	2765768.98
2-47	1072372.83	2765714.06
2-48	1072372.94	2765715.04
2-49	1072381.36	2765721.88
2-50	1072385.52	2765721.25
2-51	1072385.72	2765715.97
2-52	1072342.73	2765774.82
2-53	1072202.14	2765760.00
2-54	1072204.89	2765760.52
2-55	1072203.76	2765769.47
2-56	1072208.43	2765769.12
2-57	1072188.56	2765747.21
2-58	1072106.30	2765724.83
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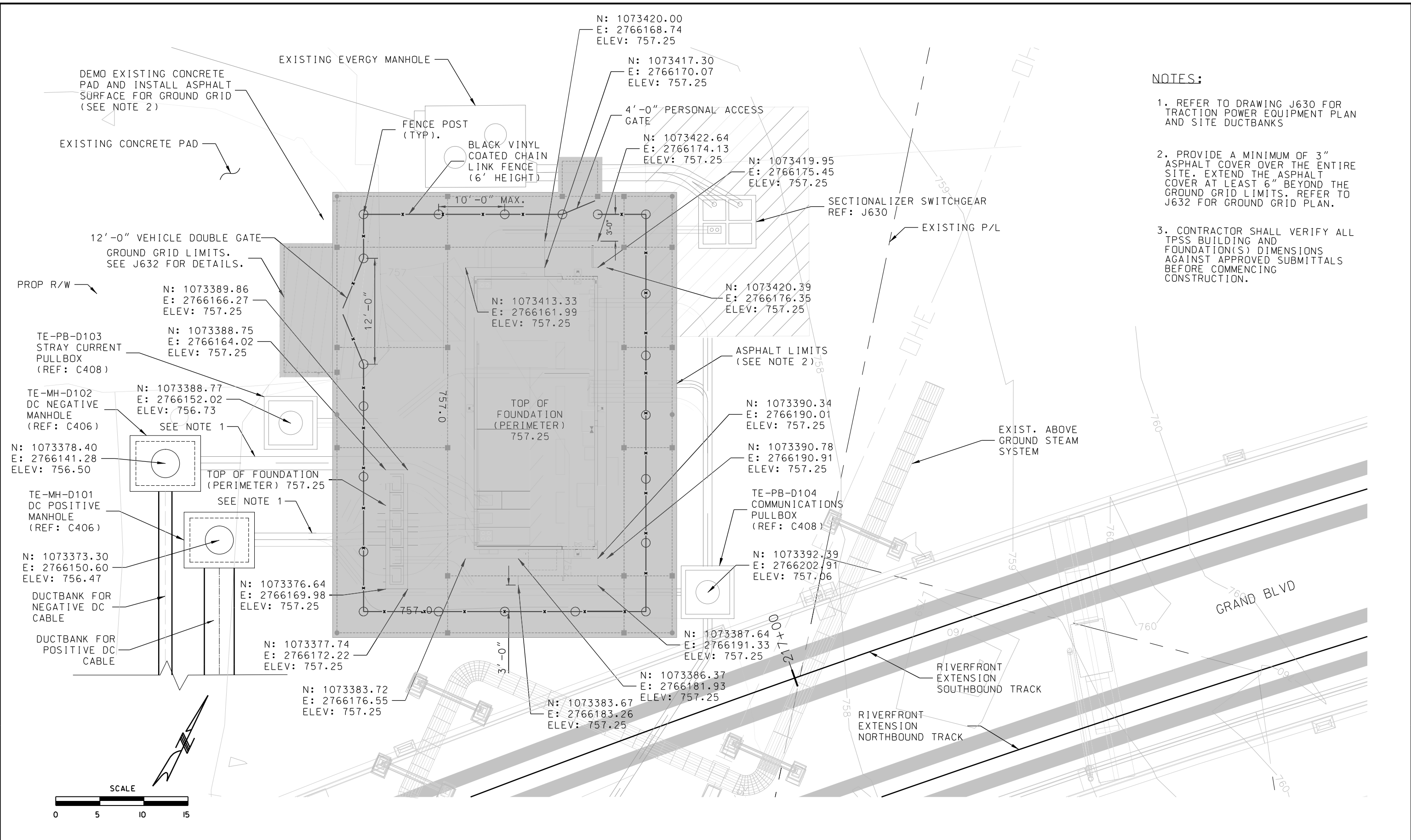
2ND STREET & GRAND BOULEVARD (CONT.)		
2-62	1072078.42	2765667.79
2-63	1072076.41	2765678.78
2-64	1072085.46	2765680.37
2-65	1072148.77	2765692.49
2-66	1072141.80	2765679.21
2-67	1072139.71	2765690.17
2-68	1072174.32	2765685.06
2-69	1072175.56	2765694.19
2-70	1072166.41	2765695.11
2-71	1072180.36	2765693.80
2-72	1072334.41	2765753.86
2-73	1072332.60	2765766.26
2-74	1072330.60	2765771.38

RIVERFRONT		
RF-1	1073967.91	2767210.24
RF-2	1073960.20	2767212.40
RF-3	1074025.28	2767414.59
RF-4	1074017.58	2767416.75
RF-5	1074082.65	2767618.94
RF-6	1074074.95	2767621.10
RF-7	1074090.82	2767647.63
RF-8	1074083.14	2767649.87
RF-9	1074107.23	2767700.01
RF-10	1074104.54	2767716.90
RF-11	1074114.70	2767721.71
RF-12	1074123.37	2767710.16
RF-13	1074118.46	2767720.33
RF-14	1074134.15	2767740.13
RF-15	1074126.29	2767741.96
RF-16	1074122.54	2767743.33
RF-17	1074135.80	2767756.57
RF-18	1074132.16	2767764.81
RF-19	NOT USED	
RF-20	1074133.65	2767772.27
RF-21	1074112.25	2767738.57
RF-22	1074085.93	2767756.70
RF-23	1074073.45	2767720.04
RF-24	1074066.01	2767722.46
RF-25	NOT USED	
RF-26	NOT USED	
RF-27	NOT USED	
RF-28	1074071.96	2767753.13
RF-29	1074064.03	2767754.71
RF-30	1074075.76	2767751.90
RF-31	1074074.78	2767785.25
RF-32	1074079.64	2767774.96
RF-33	1074083.40	2767773.59
RF-34	1074095.23	2767783.11
RF-35	1074230.43	2767992.35
RF-36	1074223.12	2767995.61
RF-37	1074274.32	2768075.41
RF-38	1074288.49	2768113.34
RF-39	1074295.42	2768109.48
RF-40	1074294.52	2768123.68
RF-41	1074311.26	2768137.12
RF-42	1074266.32	2768077.78
RF-43	1074281.26	2768131.12
RF-44	1074255.05	2768132.05
RF-45	1074261.85	2768141.96
RF-46	1074270.58	2768137.08
RF-47	1074288.32	2768164.37
RF-48	1074297.06	2768159.50

RIVERFRONT (CONT.)		
RF-49	1074370.40	2768243.39
RF-50	1074363.41	2768247.28
RF-51	1074428.62	2768348.01
RF-52	1074421.62	2768351.88
RF-53	1074391.88	2768329.90
RF-54	1074408.29	2768359.39
RF-55	1074399.55	2768364.25
RF-56	1074383.14	2768334.76
RF-57	1074035.53	2767349.66
RF-58	1074007.04	2767349.62
RF-59	1074004.34	2767339.99
RF-60	1073996.63	2767342.15
RF-61	1073999.34	2767351.78
RF-62	1074035.23	2767357.53
RF-63	1074009.16	2767357.15
RF-64	1074011.86	2767366.78
RF-65	1074004.16	2767368.95
RF-66	1074001.45	2767359.32
RF-67	1074107.22	2767724.43
RF-68	1074130.87	2767731.01
RF-69	1074145.17	2767725.47
RF-70	1074148.00	2767732.96
RF-71	1074133.55	2767738.46
RF-72	1074125.44	2767773.29
RF-73	1074087.76	2767785.84
RF-74	1074072.09	2767777.62
RF-75	1074074.59	2767760.61
RF-76	1074067.04	2767763.27
RF-77	1074246.50	2768002.42
RF-78	1074240.49	2767985.59
RF-79	1074248.44	2767986.53
RF-80	1074248.33	2767987.53
RF-81	1074252.59	2768013.56
RF-82	1074250.98	2768018.91
RF-83	1074254.50	2768017.07
RF-84	1074257.38	2768022.34
RF-85	1074253.92	2768024.15
RF-86	1074249.03	2768015.42
RF-87	1074245.60	2768009.31
RF-88	1074244.05	2768021.93
RF-89	1074237.73	2768008.44
RF-90	1074238.55	2768001.47
RF-91	1074267.86	2768065.31
RF-92	1074274.67	2768061.45
RF-93	1074278.16	2768059.49
RF-94	1074271.75	2768056.21
RF-95	1074269.81	2768052.71
RF-96	1074267.87	2768049.21
RF-97	1074271.31	2768047.28

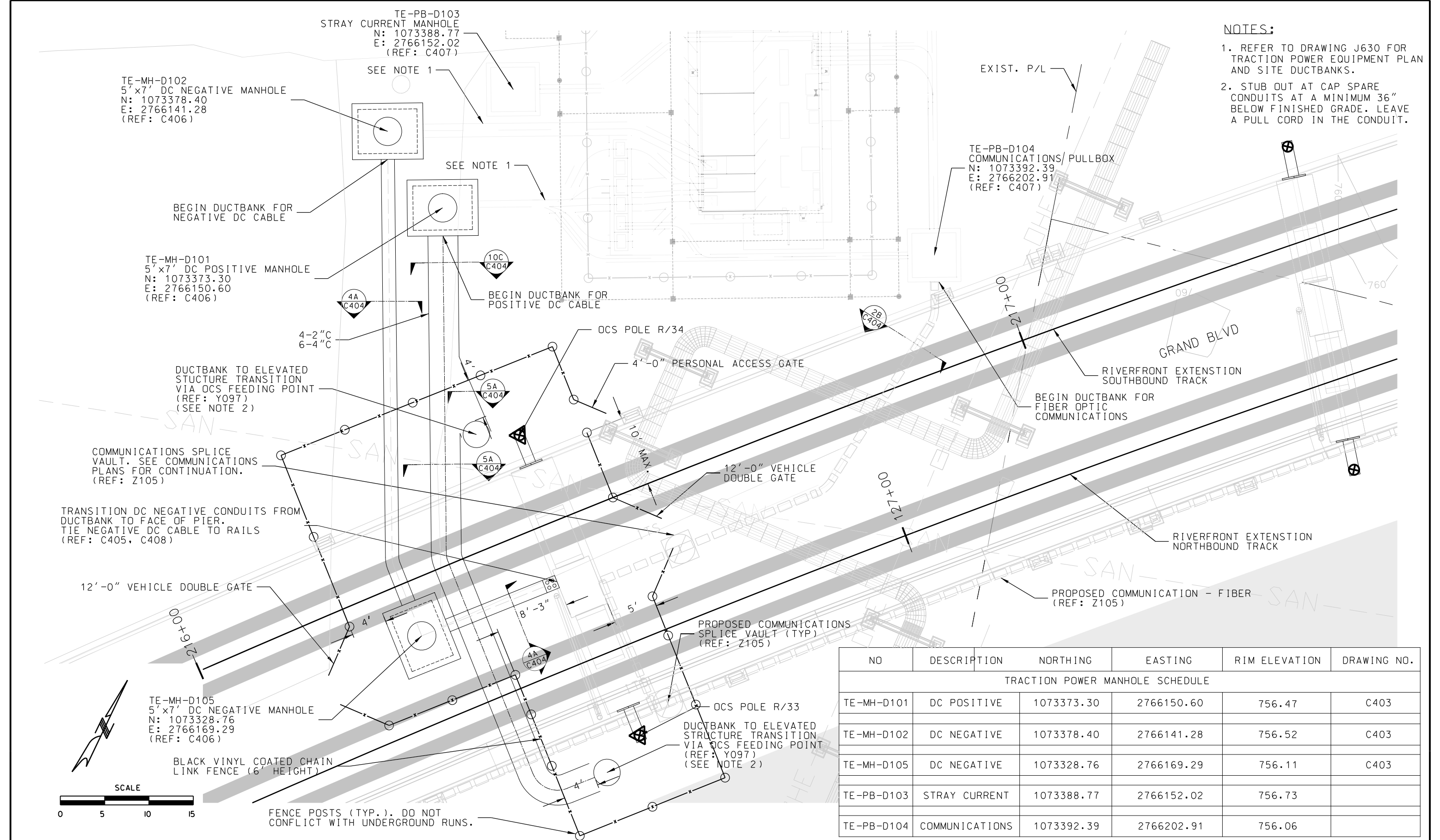
2nd STREET - NB to VMF		
POINT	NORTHING	EASTING
2-100	1072269.48	2765742.36
2-101	1072269.35	2765743.02
2-102	1072267.67	2765753.17
2-103	1072259.98	2765753.73
2-104	1072266.58	2765759.76
2-105	1072260.45	2765760.21
2-106	1072253.86	2765760.70
2-107	1072256.24	2765783.82
2-108	1072268.24	2765790.92
2-109	1072276.28	2765822.26
2-110	1072283.74	2765851.32
2-111	1072291.19	2765880.38
2-112	1072299.23	2765911.71
2-113	1072289.83	2765927.60
2-114	1072295.53	2765983.32
2-115	1072300.61	2765976.73
2-116	1072298.06	2765963.25
2-117	1072292.73	2765941.92
2-118	1072287.39	2765920.60
2-119	1072293.16	2765910.84
2-120	1072285.70	2765881.79
2-121	1072278.25	2765852.73
2-122	1072270.79	2765823.67
2-123	1072263.33	2765794.61
2-124	1072253.63	2765788.87
2-125	1072249.09	2765782.74
2-126	1072245.71	2765769.27
2-127	1072243.74	2765761.44
2-128	1072242.13	2765755.04
2-129	1072245.66	2765754.78
2-130	1072239.65	2765745.20
2-131	1072239.23	2765743.44
2-132	1072242.93	2765737.75
2-133	1072248.28	2765738.30
2-134	1072246.83	2765744.67
2-135	1072252.25	2765754.30
2-136	1072259.17	2765740.38
2-137	1072259.24	2765743.76

REV	DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION			SCALE FOR 22"x34":		
			CHECKED BY	NWH									NOT TO SCALE		
			DRAWN BY	EJR									FILENAME:		
			CHECKED BY	NWH									C316.dgn		
			APPROVED BY	NKS									CONTRACT NO. ***		
PLOT DATE: 12/23/2022			DATE		12-23-2022		10450 Holmes Road			CIVIL POINT TABLE DETAILS			VOLUME:		
							Suite 600						DRAWING NO.:		
							Kansas City, MO 64131-3471						SHEET NO.:		
							816-360-2700						C316		
							Certificate of Authority: 000856						125		
								NOT FOR CONSTRUCTION							



- NOTES:**
1. REFER TO DRAWING J630 FOR TRACTION POWER EQUIPMENT PLAN AND SITE DUCTBANKS
 2. PROVIDE A MINIMUM OF 3" ASPHALT COVER OVER THE ENTIRE SITE. EXTEND THE ASPHALT COVER AT LEAST 6" BEYOND THE GROUND GRID LIMITS. REFER TO J632 FOR GROUND GRID PLAN.
 3. CONTRACTOR SHALL VERIFY ALL TPSS BUILDING AND FOUNDATION(S) DIMENSIONS AGAINST APPROVED SUBMITTALS BEFORE COMMENCING CONSTRUCTION.

REV	DATE	DESCRIPTION	DESIGNED BY	AJC	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	CJH	HDR	HDR Engineering, Inc.	TRACTION POWER SUBSTATION (TPSS)	AS NOTED
			DRAWN BY	AJC	10450 Holmes Road	715 Kirk Drive	RIVERFRONT	FILENAME:
			CHECKED BY	CJH	Suite 800	Kansas City, MO 64113-3471	GRADING PLAN	C401.dgn
			APPROVED BY	CJH	816-360-2700	816-472-1201		CONTRACT NO.:
					Certificate of Authority: 000856	Certificate of Authority: 001270		CONTRACT NO. ***
								VOLUME:
								DRAWING NO.:
								SHEET NO.:
								C401
								126



- NOTES:
1. REFER TO DRAWING J630 FOR TRACTION POWER EQUIPMENT PLAN AND SITE DUCTBANKS.
 2. STUB OUT AT CAP SPARE CONDUITS AT A MINIMUM 36" BELOW FINISHED GRADE. LEAVE A PULL CORD IN THE CONDUIT.

NO	DESCRIPTION	NORTHING	EASTING	RIM ELEVATION	DRAWING NO.
TRACTION POWER MANHOLE SCHEDULE					
TE-MH-D101	DC POSITIVE	1073373.30	2766150.60	756.47	C403
TE-MH-D102	DC NEGATIVE	1073378.40	2766141.28	756.52	C403
TE-MH-D105	DC NEGATIVE	1073328.76	2766169.29	756.11	C403
TE-PB-D103	STRAY CURRENT	1073388.77	2766152.02	756.73	
TE-PB-D104	COMMUNICATIONS	1073392.39	2766202.91	756.06	

REV

DATE

DESCRIPTION

DESIGNED BY

CHECKED BY

DRAWN BY

CHECKED BY

APPROVED BY

4:09:45 PM

12-23-2022

RideKC

STREETCAR

12-23-2022

AARON J. CASTRO - ENGINEER

LICENSE NO. PE-2022042413

ISSUED FOR BID

DATE: 12-23-2022

HDR

HDR Engineering, Inc.

10450 Holmes Road

Suite 800

Kansas City, MO 64131-3471

816-360-2700

Certificate of Authority: 000856

HNTB

The HNTB Companies

715 Kirk Drive

Kansas City, MO 64105

816-472-1201

Certificate of Authority: 001270

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACTION POWER SUBSTATION (TPSS)

RIVERFRONT

DUCTBANK PLAN

SCALE FOR 22"x34": AS NOTED

FILENAME: C402.dgn

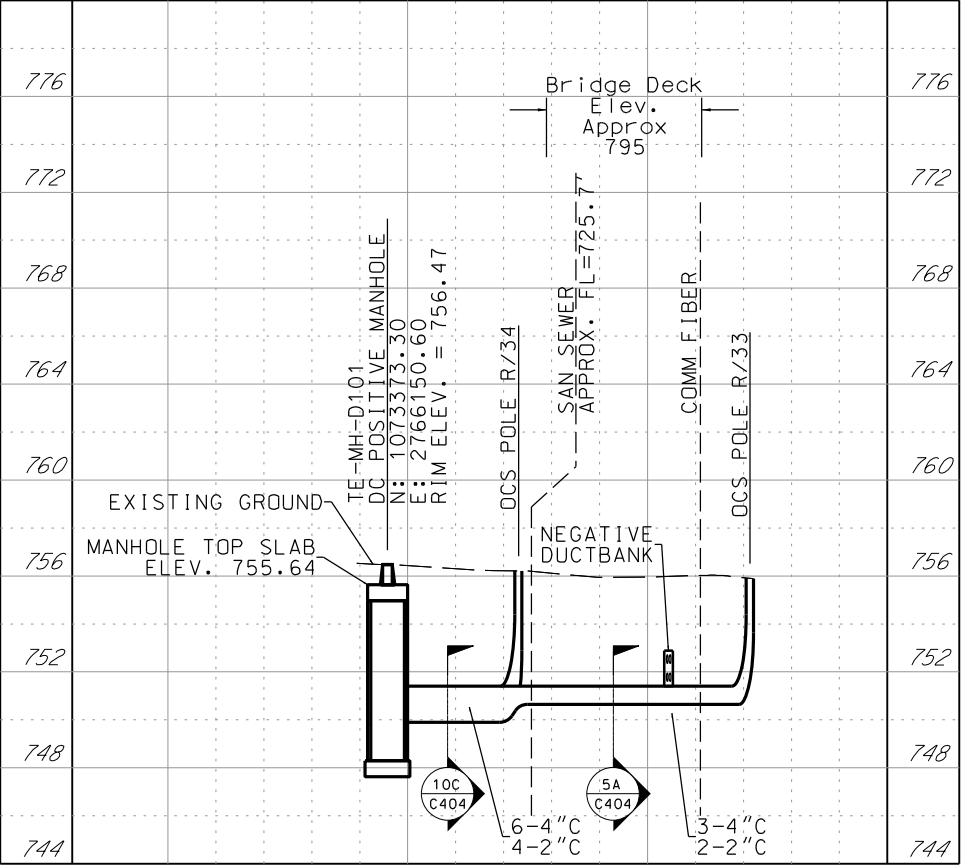
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VOLUME:

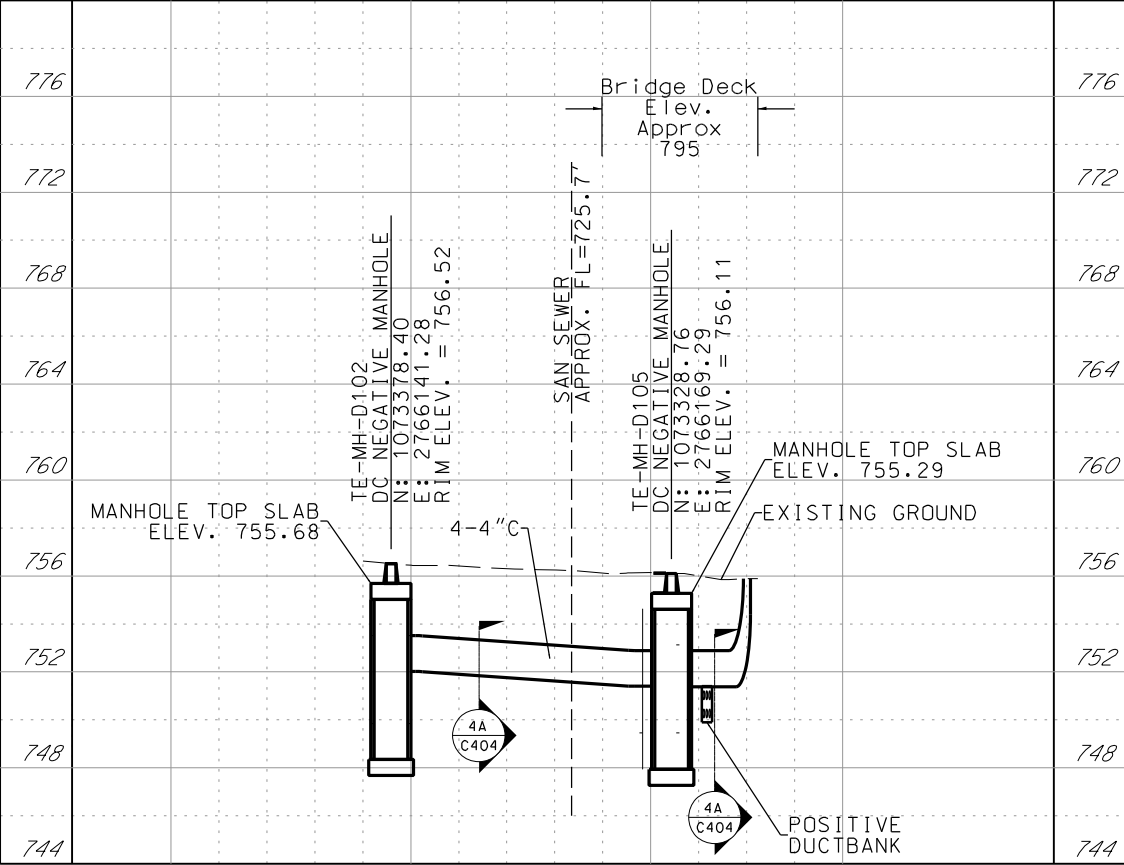
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C402 127

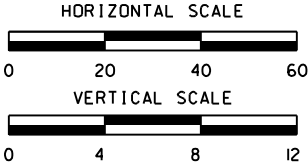
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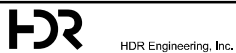


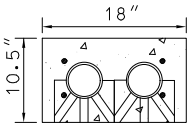
DC POSITIVE DUCTBANK



DC NEGATIVE DUCTBANK

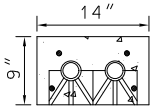


REV	DATE	DESCRIPTION	DESIGNED BY	AJC			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER SUBSTATION (TPSS) RIVERFRONT DUCTBANK PROFILE 1	SCALE FOR 22"x34": AS NOTED FILENAME: C403.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: C403 128
			CHECKED BY	CJH									
			DRAWN BY	AJC									
			CHECKED BY	CJH									
			APPROVED BY	CJH									
PLOT DATE: 12/22/2022			4:09:48 PM		DATE		12-23-2022		NOT FOR CONSTRUCTION				



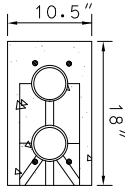
2 - 4" PVC (1H X 2W)
SCALE: 1" = 1'-0"

2A
-



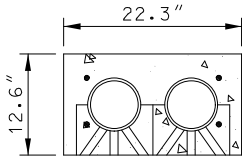
2 - 2" PVC (1H X 2W)
SCALE: 1" = 1'-0"

2B
-



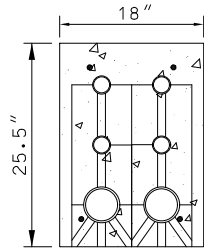
2 - 4" PVC (2H X 1W)
SCALE: 1" = 1'-0"

2C
-



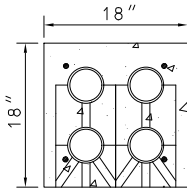
2 - 6" PVC (1H X 2W)
SCALE: 1" = 1'-0"

2D
-



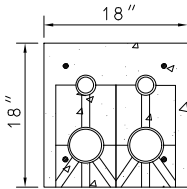
2 - 4" PVC AND
4 - 2" PVC (3H X 2W)
SCALE: 1" = 1'-0"

3A
-



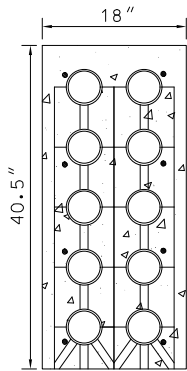
4 - 4" PVC (2H X 2W)
SCALE: 1" = 1'-0"

4A
-



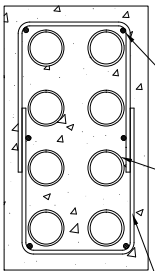
2 - 4" PVC AND
2 - 2" PVC (2H X 2W)
SCALE: 1" = 1'-0"

4C
-

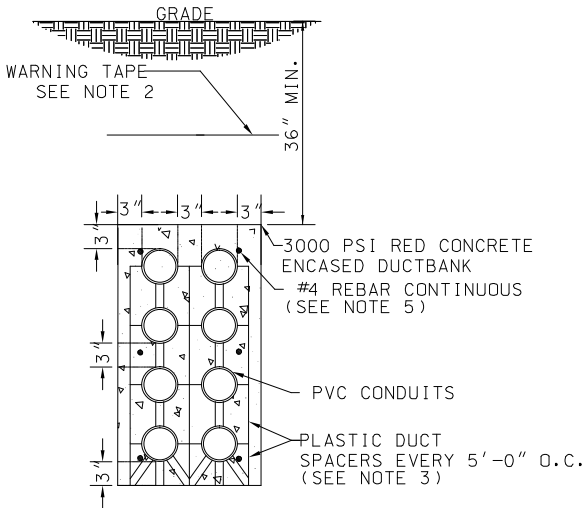


10 - 4" PVC (5H X 2W)
SCALE: 1" = 1'-0"

10A
-



CONCRETE ENCASED DUCTBANK
TYPICAL REINFORCING DETAIL
SCALE: 1" = 1'-0"

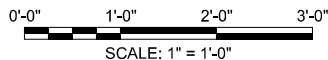


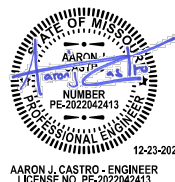
TYPICAL DUCTBANK CONFIGURATION
CONCRETE ENCASED DUCTBANK SECTION
SCALE: 1" = 1'-0"

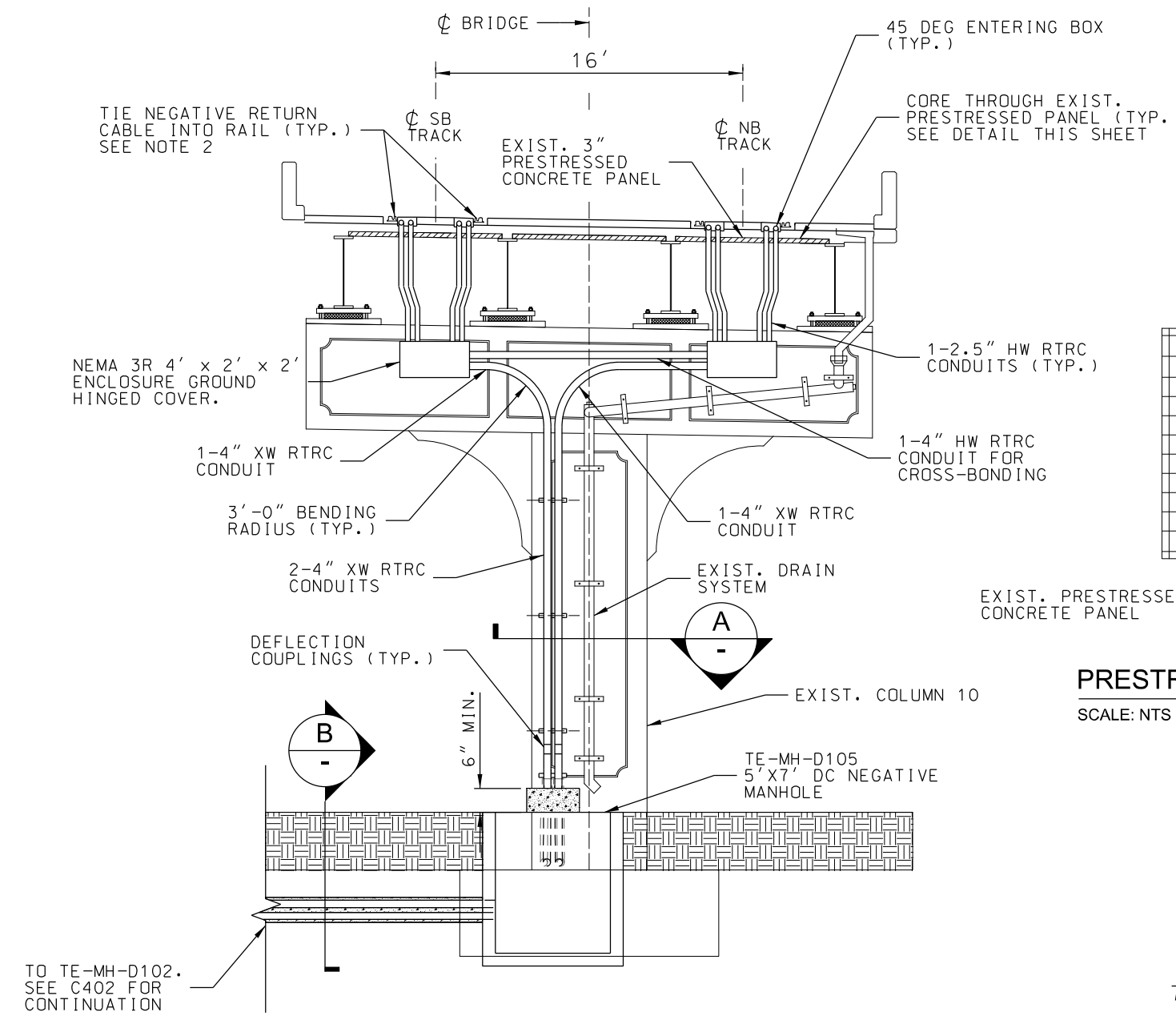
DUCTBANK REINFORCEMENT TABLE			
DB CONFIGURATION	D (DEPTH) IN	W (WIDTH) IN	N (NUMBER OF LONGITUDINAL BARS)
1H X 2W	10.5	18.0	4
1H X 2W	9	14.0	4
1H X 3W	10.5	25.5	4
1H X 3W	9	20	4
3H X 1W	20	9	4
2H X 2W	18.0	18.0	4
1H X 4W	10.5	33.0	6
3H X 2W	25.5	18.0	6
2H X 3W	18.0	25.0	6
4H X 2W	33.0	18.0	6
2H X 4W	18.0	33.0	6
1H X 8W	10.5	63.0	10
5H X 2W	40.5	18.0	8
2H X 5W	18.0	40.5	8
1H X 10W	10.5	78.0	10
1H X 10W	10.5	96.0	14
2H X 4W	18	60	10

NOTES:

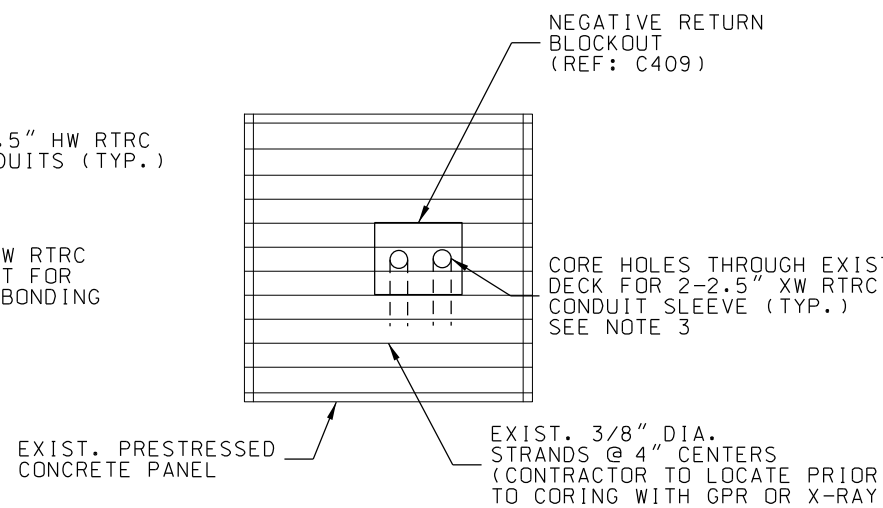
- WHERE DIRECT BURIED CONDUITS INTERSECT CONCRETE ENCASED DUCTBANKS, COVER DEPTH FOR CONDUITS SHALL BE ADJUSTED TO SUIT THE INSTALLATION AS APPROVED BY THE ENGINEER.
- PROVIDE DETECTABLE WARNING TAPE MINIMUM 9" DEPTH FROM SURFACE.
- STIRRUPS MAY BE REPLACED BY ADDING ADDITIONAL PLASTIC DUCT SPACERS AT INTERVALS OF 2.5 FT MAXIMUM SPACING AND CONNECTING HORIZONTAL REBAR TO THE SPACERS AT THE 2.5 FT MAXIMUM INTERVAL, PROVIDED NO METAL TOUCHES CONDUITS. THE SPACERS, WHICH CAN ACCOMMODATE THE REBAR CONNECTION/INSERTS SHALL BE SUBMITTED FOR APPROVAL AND APPROVED PRIOR TO INSTALLATION.
- DUCTBANK CONFIGURATION MAY BE ADJUSTED AS NEEDED BY THE CONTRACTOR TO AVOID CONFLICTS WITH EXISTING UTILITIES AND/OR OTHER ELEMENTS. THE NUMBER AND SIZE OF CONDUITS SHALL NOT BE CHANGED WITHOUT APPROVAL BY THE ENGINEER.
- THE DUCTBANK LONGITUDINAL REBAR SHALL OVERLAP A MINIMUM OF 18 INCHES OR UTILIZE THREADED REBAR DOWELS. A MINIMUM OF FOUR REBARS OR 60 PERCENT OF THE LONGITUDINAL BARS SHALL BE EPOXY EMBEDDED 3 INCHES INTO A MANHOLE WALL.



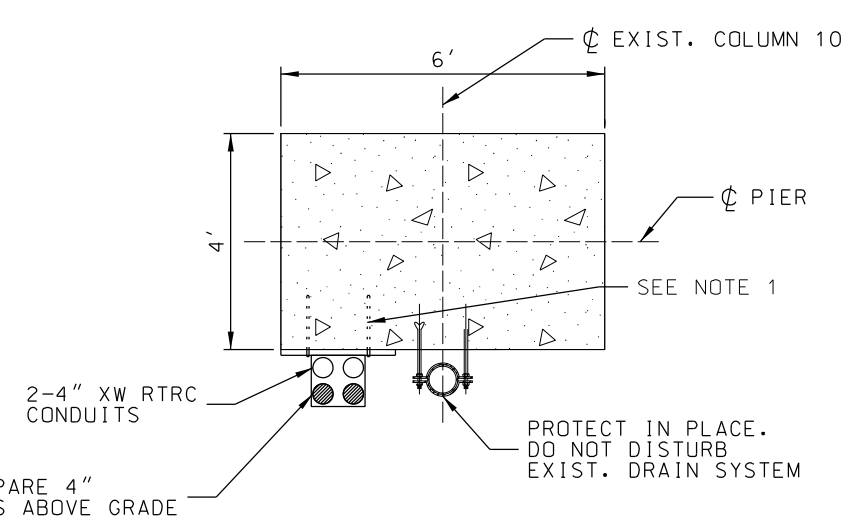
REV	DATE	DESCRIPTION	DESIGNED BY	AJC			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": AS NOTED FILENAME: C404.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: C404 129				
			CHECKED BY	CJH						TRACTION POWER AND SCADA SYSTEM TYPICAL DUCTBANK SECTIONS								
			DRAWN BY	AJC			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856											
			CHECKED BY	CJH			715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270											
			APPROVED BY	CJH			12-23-2022											
PLOT DATE: 12/22/2022			4:09:52 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION											



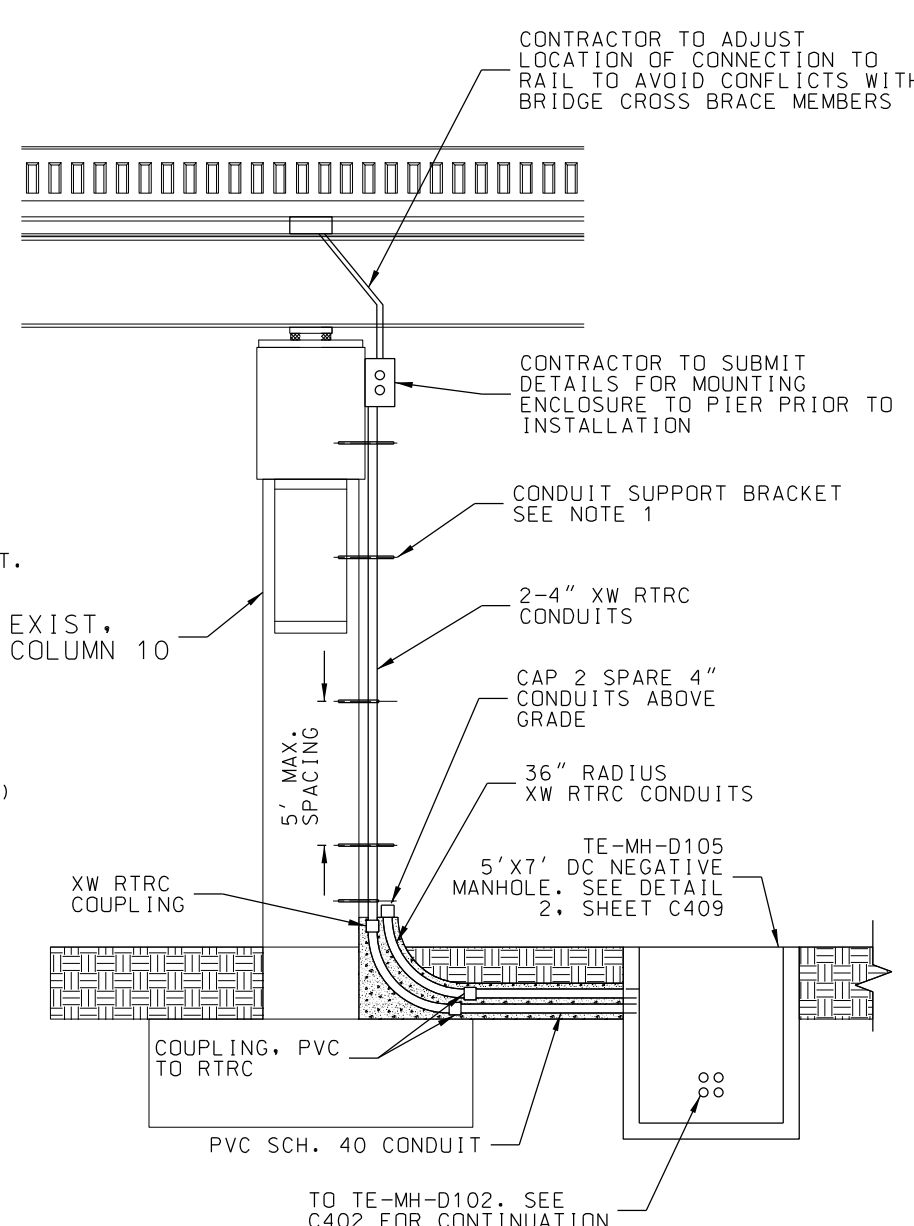
TRACTION POWER RACEWAY AT GRADE TO ELEVATED STRUCTURE TRANSITION DETAIL
SCALE: NTS



PRESTRESSED PANEL CORING DETAIL
SCALE: NTS

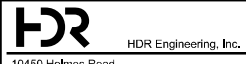


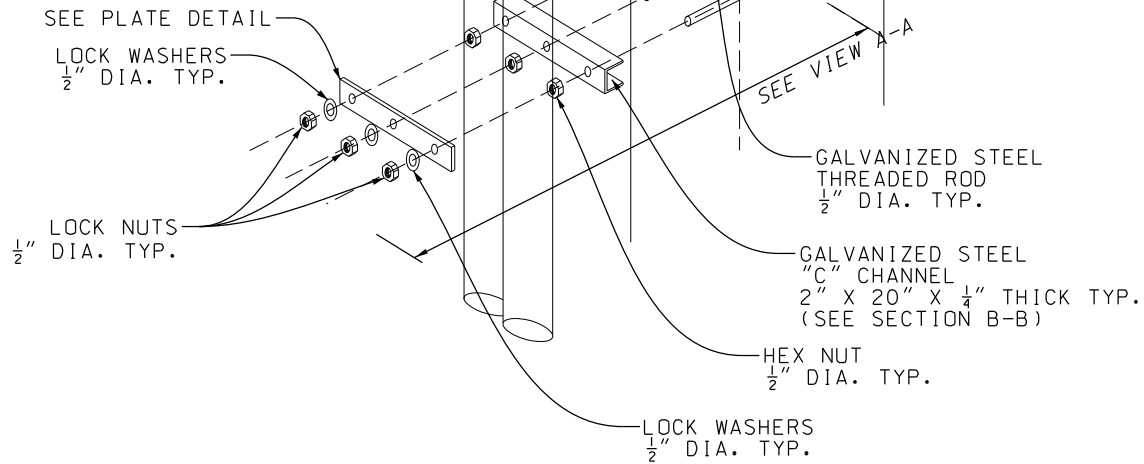
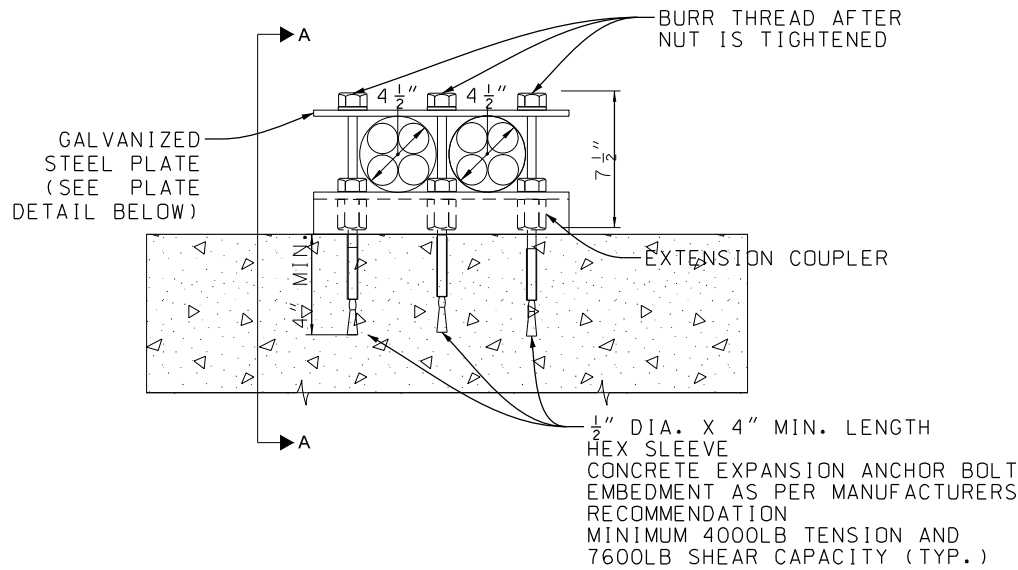
COLUMN SECTION
SCALE: NTS



SECTION B-B
SCALE: NTS

- NOTES:
- SEE C406 FOR RISER CONNECTION DETAIL
 - SEE C409 FOR NEGATIVE RETURN AND CROSS BONDING DETAILS
 - CONTRACTOR TO FIELD LOCATE CORE HOLES FOR CONDUIT TO AVOID IMPACTING PRESTRESSED STRANDS IN CONCRETE PANEL WITH GRP OR X-RAY.
 - CONTRACTOR SHALL NOT CORE THROUGH EXISTING PRESTRESSED STRANDS WITHOUT APPROVAL BY ENGINEER.

REV	DATE	DESCRIPTION	DESIGNED BY	AJC					ISSUED FOR BID DATE: 12-23-2022  10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		DATE: 12-23-2022  The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": AS NOTED FILENAME: C405.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: C405 130	
			CHECKED BY	CJH												
			DRAWN BY	AJC												
			CHECKED BY	CJH												
			APPROVED BY	CJH												
PLOT DATE: 12/22/2022			4:09:55 PM		DATE	12-23-2022			NOT FOR CONSTRUCTION		TPSS DUCTBANK NEGATIVE RISER DETAILS					



NOTES:

1. UTILIZE AN APPROXIMATE LENGTH OF FLEXIBLE CONDUIT AT EXPOSED CONNECTIONS OF 2 TIMES ANTICIPATED MOVEMENT OR 4'-0" MINIMUM.
2. SIZE ALL TRANSITION BOXES AND SURFACE MOUNTED PULL BOXES PER NATIONAL ELECTRICAL CODE ARTICLE 314 BOXES AND FITTINGS.
3. FOR UNDER BRIDGE LOCATIONS, ENSURE ALL JUNCTION BOXES ARE KEPT INACCESSIBLE FROM GENERAL PUBLIC AND PLACED A MINIMUM 10'-0" ABOVE SURROUNDING GROUND.
4. SEE PLAN SHEETS FOR NUMBER AND SIZE OF CONDUIT(S) TO BE INSTALLED.
5. ENSURE MAXIMUM SPACING BETWEEN RISER CONDUIT ATTACHMENTS IS 5'-0" C-C.
6. INSTALL CONDUIT SUPPORTS WITHIN 3'-0" OF ALL ENCLOSURES AND CONDUIT TERMINATIONS.
7. GROUND ALL RIGID METALLIC CONDUIT (RMC) HANGERS PER MANUFACTURER RECOMMENDATIONS WHEN ELECTRICAL CONDUCTORS PRESENT WITH A LOCAL GROUND ROD.
8. ENSURE ALL EXPANSION ANCHORS CONFORM TO ASTM A307.

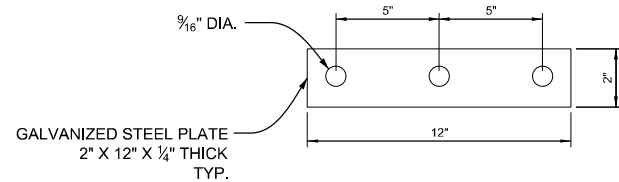
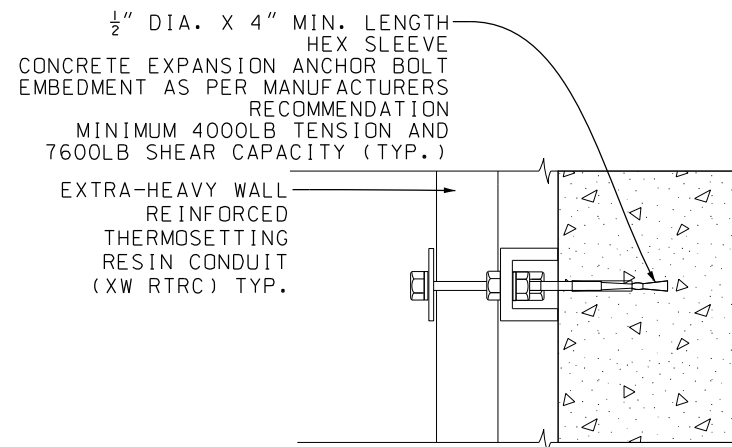
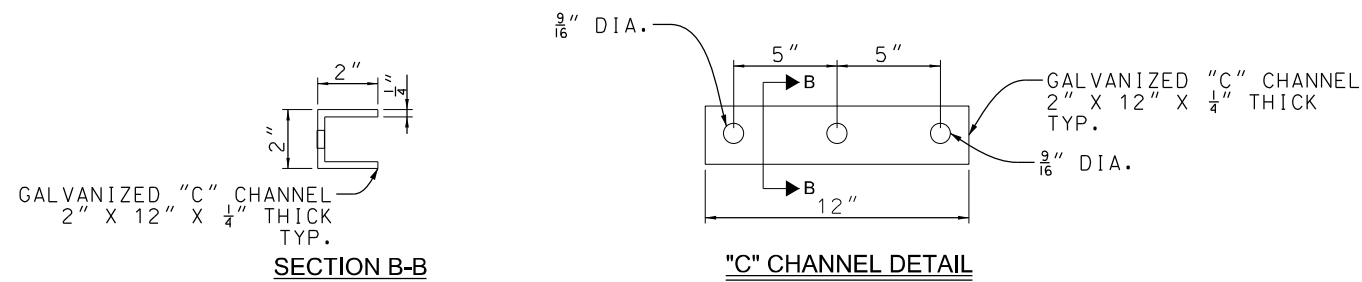


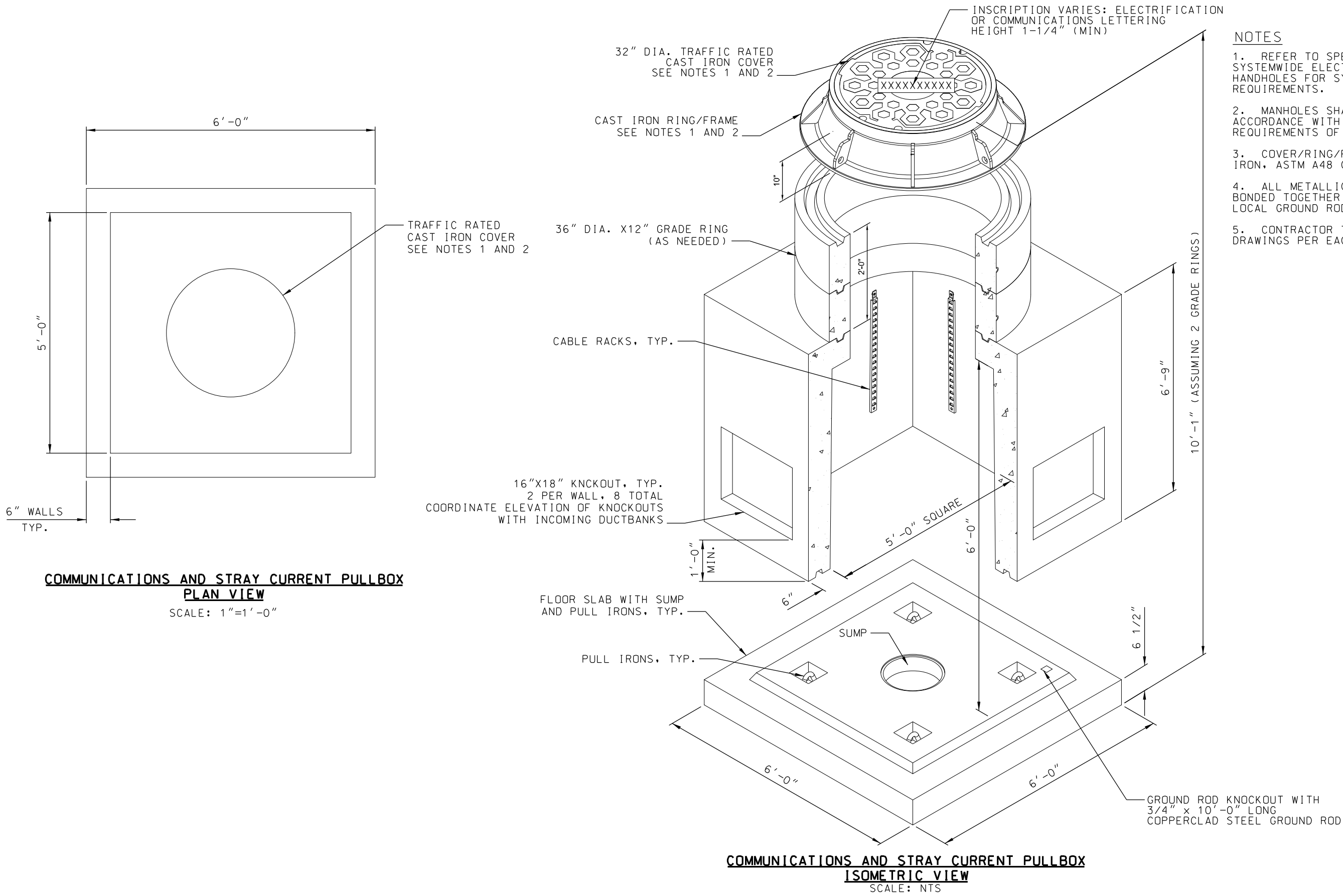
PLATE DETAIL



ITS RISER CONDUIT BRIDGE COLUMN ATTACHMENT

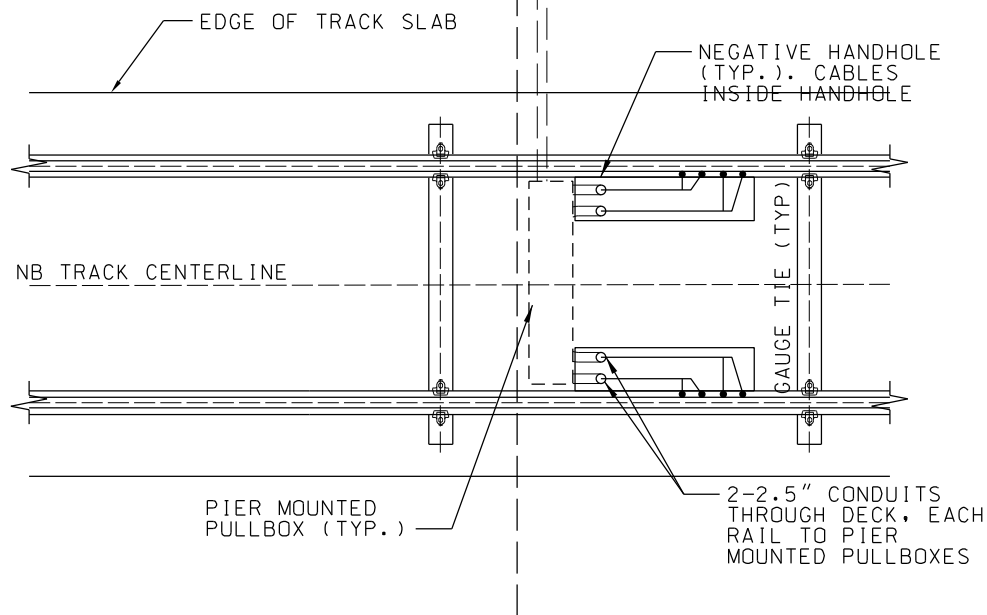
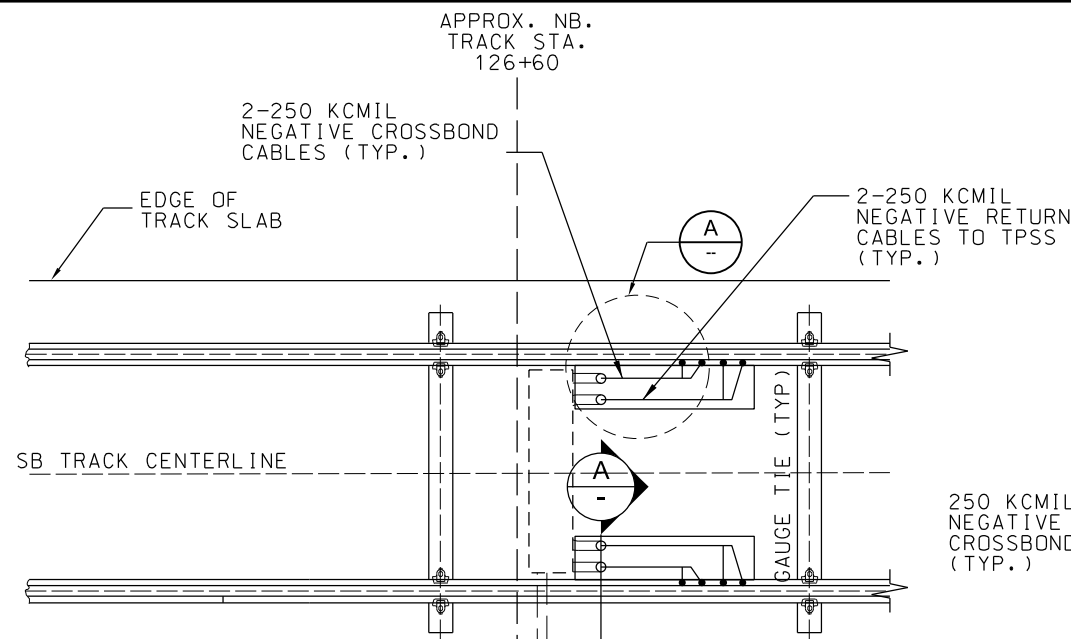
REV	DATE	DESCRIPTION	DESIGNED BY	AJC			ISSUED FOR BID DATE: 12-23-2022  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856  The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270 NOT FOR CONSTRUCTION	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION TPSS CONDUIT RISER DETAILS	SCALE FOR 22"x34":	
			CHECKED BY	CJH					AS NOTED	
			DRAWN BY	AJC					FILENAME: C406.dgn	
			CHECKED BY	CJH					CONTRACT NO.: CONTRACT NO. ***	
			APPROVED BY	CJH					VOLUME: I	
PLOT DATE: 12/22/2022			4:09:58 PM		DATE	12-23-2022	DRAWING NO.: SHEET NO.:			
							C406 131			

TPSS CONDUIT RISER DETAILS

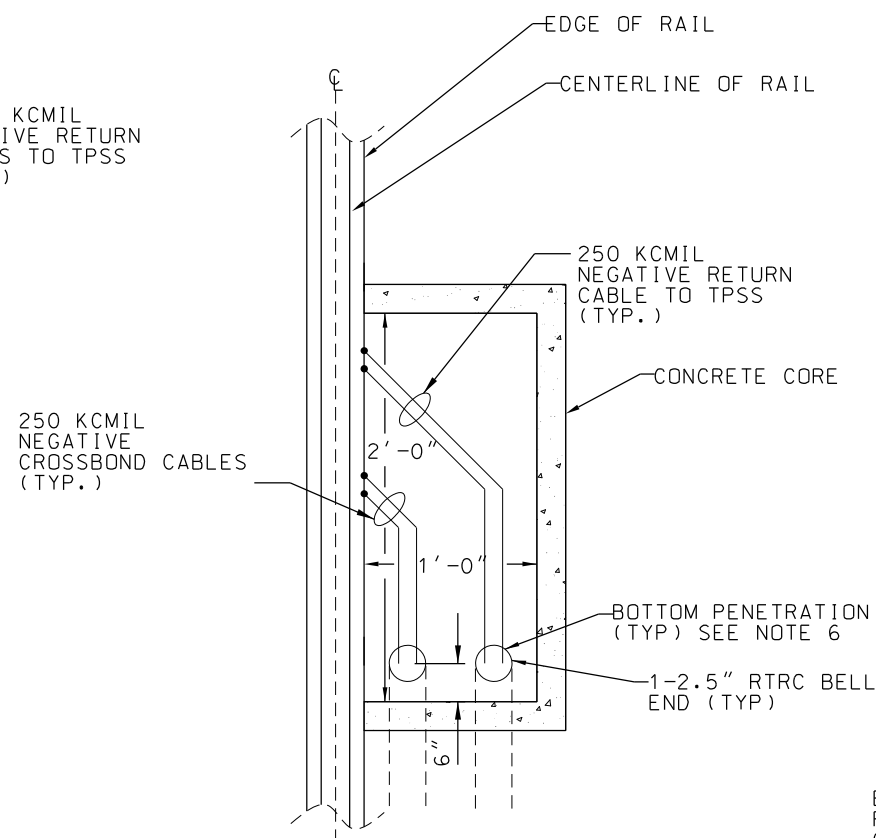


- NOTES**
1. REFER TO SPECIFICATION 26 05 44, SYSTEMWIDE ELECTRICAL MANHOLES AND HANDHOLES FOR SYSTEMS, FOR ADDITIONAL REQUIREMENTS.
 2. MANHOLES SHALL BE DESIGNED IN ACCORDANCE WITH HL-93 LOADING REQUIREMENTS OF AASHTO AND ASTM C857.
 3. COVER/RING/FRADE MATERIAL: CAST IRON, ASTM A48 CLASS 35B.
 4. ALL METALLIC COMPONENTS SHALL BE BONDED TOGETHER AND GROUNDED WITH A LOCAL GROUND ROD, AS SHOWN.
 5. CONTRACTOR TO SUBMIT SHOP DRAWINGS PER EACH LOCATION.

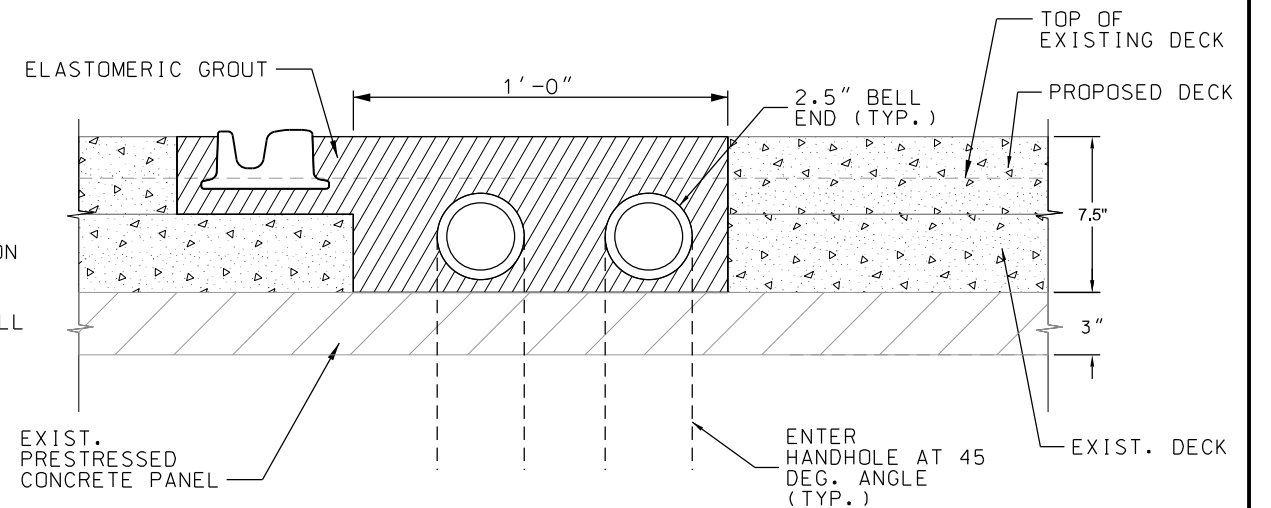
REV	DATE	DESCRIPTION	DESIGNED BY	AJC			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB Companies Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER SUBSTATION (TPSS) COMMUNICATIONS AND STRAY CURRENT PULLBOX TYPICAL DETAILS	SCALE FOR 22"x34": AS NOTED FILENAME: C408.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.:	
			CHECKED BY	CJH										
			DRAWN BY	AJC										
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PLOT DATE: 12/22/2022			4:04:03 PM						NOT FOR CONSTRUCTION					



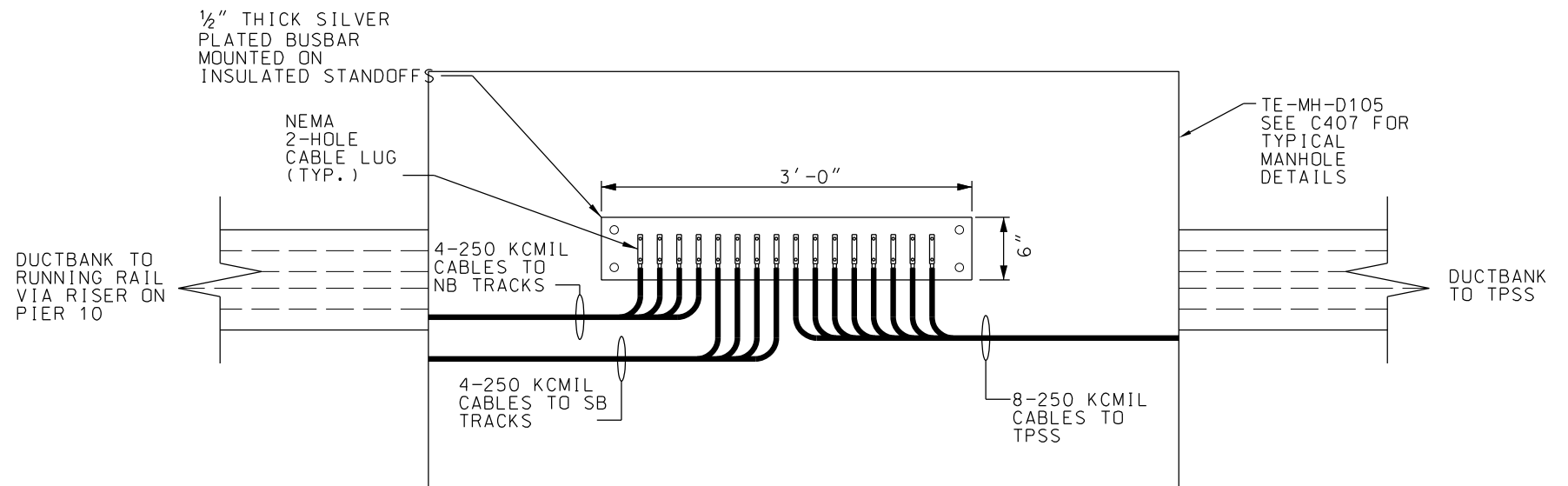
TRACK BLOCK OUT DETAIL 1
SCALE: NTS



NEGATIVE RETURN HANDHOLE DETAIL TYPICAL A
SCALE: NTS



SECTION A-A
SCALE: NTS

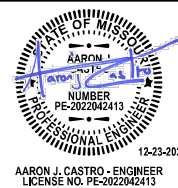


NEGATIVE MANHOLE AND BUS BAR 2
SCALE: NTS

NOTES:

1. BLOCKOUT FOR NEGATIVE RETURN MAY BE ON INSIDE OR OUTSIDE OF TRACKWAY.
2. EXOTHERMICALLY WELD NEGATIVE RETURN CABLES TO NEUTRAL AXIS ON WEB OF RAIL.
3. CONTRACTOR SHALL FILL THE BLOCKOUT WITH ELASTOMERIC GROUT AFTER CONNECTING THE NEGATIVE RETURN CABLES. DUCT SEAL CONDUITS BEFORE FILLING WITH GROUT. ALTERNATIVELY, CONTRACTOR MAY PROPOSE A SUITABLE HANDHOLE WITH AN AASHTO HL-93 TRAFFIC RATED COVER.
4. REFER TO C405 FOR NEGATIVE RETURN RISER DETAILS.
5. CONTRACTOR SHALL LOCATE PENETRATION HOLES TO AVOID EXISTING PRESTRESSED STRANDS IN EXISTING PRESTRESSED PANELS. (REF: C405)

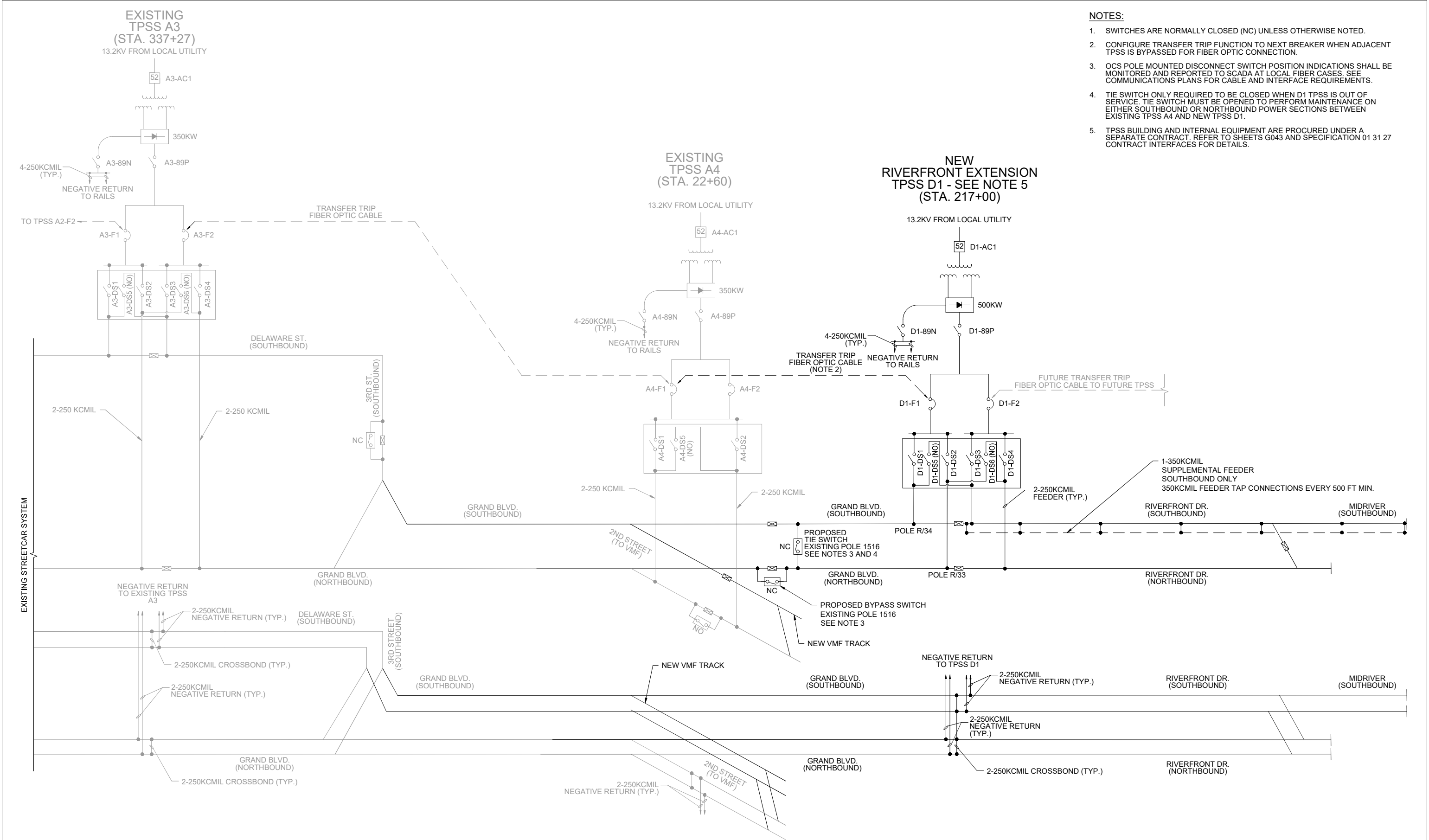
REV	DATE	DESCRIPTION	DESIGNED BY	AJC
			CHECKED BY	CJH
			DRAWN BY	AJC
			CHECKED BY	CJH
			APPROVED BY	CJH
PLOT DATE: 12/22/2022			DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HNTB The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
TRACTION POWER SUBSTATION (TPSS) TYPICAL NEGATIVE RETURN TRACK BLOCKOUT AND TYPICAL CONDUIT STUB-UP DETAIL	

SCALE FOR 22"x34": AS NOTED	FILENAME: C409.dgn
CONTRACT NO.:	CONTRACT NO. ***
VOLUME:	
DRAWING NO.:	SHEET NO.:
C409	134



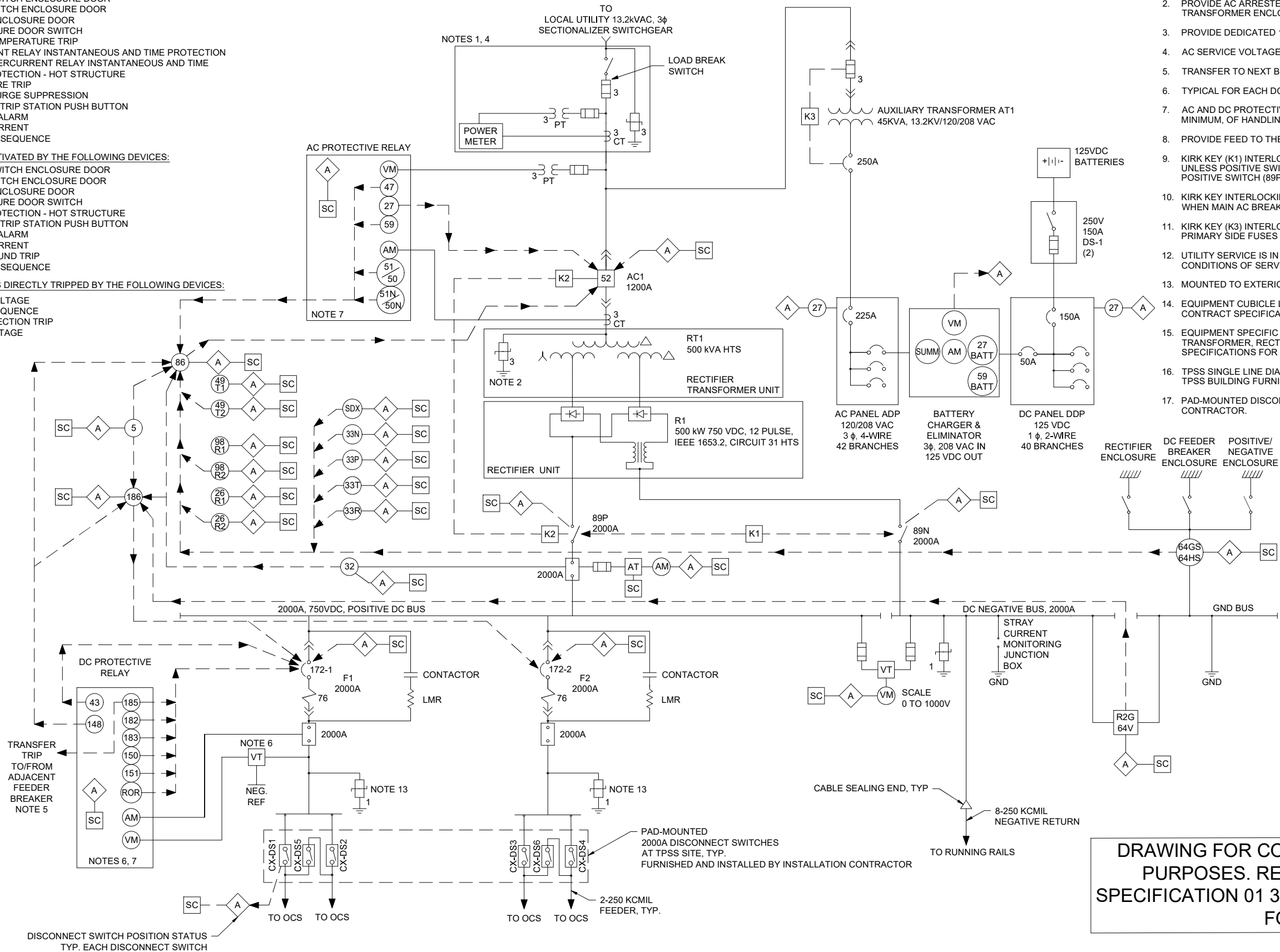
- NOTES:**
- SWITCHES ARE NORMALLY CLOSED (NC) UNLESS OTHERWISE NOTED.
 - CONFIGURE TRANSFER TRIP FUNCTION TO NEXT BREAKER WHEN ADJACENT TPSS IS BYPASSED FOR FIBER OPTIC CONNECTION.
 - OCS POLE MOUNTED DISCONNECT SWITCH POSITION INDICATIONS SHALL BE MONITORED AND REPORTED TO SCADA AT LOCAL FIBER CASES. SEE COMMUNICATIONS PLANS FOR CABLE AND INTERFACE REQUIREMENTS.
 - TIE SWITCH ONLY REQUIRED TO BE CLOSED WHEN D1 TPSS IS OUT OF SERVICE. TIE SWITCH MUST BE OPENED TO PERFORM MAINTENANCE ON EITHER SOUTHBOUND OR NORTHBOUND POWER SECTIONS BETWEEN EXISTING TPSS A4 AND NEW TPSS D1.
 - TPSS BUILDING AND INTERNAL EQUIPMENT ARE PROCURED UNDER A SEPARATE CONTRACT. REFER TO SHEETS G043 AND SPECIFICATION 01 31 27 CONTRACT INTERFACES FOR DETAILS.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER SYSTEM MASTER SINGLE LINE DIAGRAM RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: J101.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: J101	SHEET NO.: 135
			CHECKED BY	PGL										
			DRAWN BY	JDW										
			CHECKED BY	PGL										
			APPROVED BY	NKS										
PLOT DATE: 12/20/2022			12:09:47 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION							

- AC LOCKOUT (86) IS ACTIVATED BY THE FOLLOWING DEVICES:
- 26-R2 RECTIFIER DIODE OVER TEMP TRIP
 - 33A-X MAIN AC BREAKER CUBICLE REAR DOOR
 - 33F-X DC FEEDER BREAKER CUBICLE REAR DOOR
 - 33N-X NEGATIVE SWITCH ENCLOSURE DOOR
 - 33P-X POSITIVE SWITCH ENCLOSURE DOOR
 - 33R-X RECTIFIER ENCLOSURE DOOR
 - 33T-X TPT ENCLOSURE DOOR SWITCH
 - 49-WT2 TPT OVER TEMPERATURE TRIP
 - 50/51 OVERCURRENT RELAY INSTANTANEOUS AND TIME PROTECTION
 - 50N/51N NEUTRAL OVERCURRENT RELAY INSTANTANEOUS AND TIME
 - 64HS GROUND PROTECTION - HOT STRUCTURE
 - 98R2 DIODE FAILURE TRIP
 - 99T RECTIFIER SURGE SUPPRESSION
 - 5 EMERGENCY TRIP STATION PUSH BUTTON
 - SDX FIRE/SMOKE ALARM
 - 32 REVERSE CURRENT
 - 148 INCOMPLETE SEQUENCE

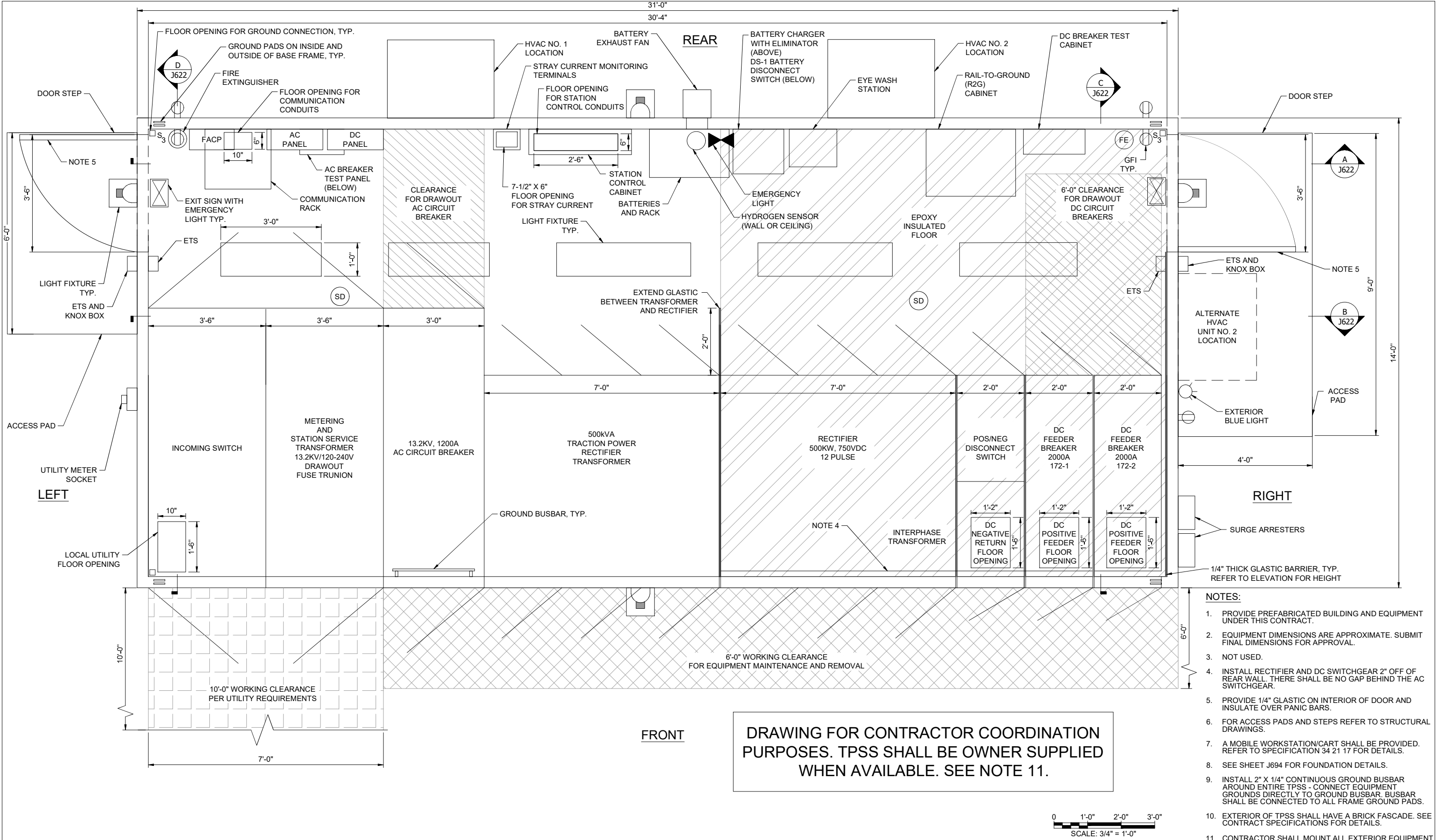
- DC LOCKOUT (186) IS ACTIVATED BY THE FOLLOWING DEVICES:
- 33N-X NEGATIVE SWITCH ENCLOSURE DOOR
 - 33P-X POSITIVE SWITCH ENCLOSURE DOOR
 - 33R-X RECTIFIER ENCLOSURE DOOR
 - 33T-X TPT ENCLOSURE DOOR SWITCH
 - 64HS GROUND PROTECTION - HOT STRUCTURE
 - 5 EMERGENCY TRIP STATION PUSH BUTTON
 - SDX FIRE/SMOKE ALARM
 - 32 REVERSE CURRENT
 - R2G RAIL TO GROUND TRIP
 - 148 INCOMPLETE SEQUENCE

- AC MAIN BREAKER (52) IS DIRECTLY TRIPPED BY THE FOLLOWING DEVICES:
- 27 AC UNDERVOLTAGE
 - 47 AC PHASE SEQUENCE
 - 50/51 RELAY PROTECTION TRIP
 - 59 AC OVERVOLTAGE



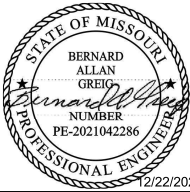
DRAWING FOR CONTRACTOR COORDINATION PURPOSES. REFER TO SHEET G043 AND SPECIFICATION 01 31 27 - CONTRACT INTERFACES FOR DETAILS.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE			
			CHECKED BY	PGL				HDR Engineering, Inc.			The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	TRACTION POWER TYPICAL MAINLINE TPSS SINGLE LINE SINGLE LINE DIAGRAM	FILENAME:
			DRAWN BY	JDW									CONTRACT NO.: ###
			CHECKED BY	PGL									VOLUME:
			APPROVED BY	NKS			1	DRAWING NO.:		SHEET NO.:			
PLOT DATE: 12/21/2022		5:10:00 PM		DATE	12/23/2022		NOT FOR CONSTRUCTION			J610	136		



- NOTES:**
1. PROVIDE PREFABRICATED BUILDING AND EQUIPMENT UNDER THIS CONTRACT.
 2. EQUIPMENT DIMENSIONS ARE APPROXIMATE. SUBMIT FINAL DIMENSIONS FOR APPROVAL.
 3. NOT USED.
 4. INSTALL RECTIFIER AND DC SWITCHGEAR 2" OFF OF REAR WALL. THERE SHALL BE NO GAP BEHIND THE AC SWITCHGEAR.
 5. PROVIDE 1/4" GLASTIC ON INTERIOR OF DOOR AND INSULATE OVER PANIC BARS.
 6. FOR ACCESS PADS AND STEPS REFER TO STRUCTURAL DRAWINGS.
 7. A MOBILE WORKSTATION/CART SHALL BE PROVIDED. REFER TO SPECIFICATION 34 21 17 FOR DETAILS.
 8. SEE SHEET J694 FOR FOUNDATION DETAILS.
 9. INSTALL 2" X 1/4" CONTINUOUS GROUND BUSBAR AROUND ENTIRE TPSS - CONNECT EQUIPMENT GROUNDS DIRECTLY TO GROUND BUSBAR. BUSBAR SHALL BE CONNECTED TO ALL FRAME GROUND PADS.
 10. EXTERIOR OF TPSS SHALL HAVE A BRICK FASCIADE. SEE CONTRACT SPECIFICATIONS FOR DETAILS.
 11. CONTRACTOR SHALL MOUNT ALL EXTERIOR EQUIPMENT PER SUPPLIER INSTRUCTIONS.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW
			CHECKED BY	PGL
			DRAWN BY	JDW
			CHECKED BY	PGL
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022



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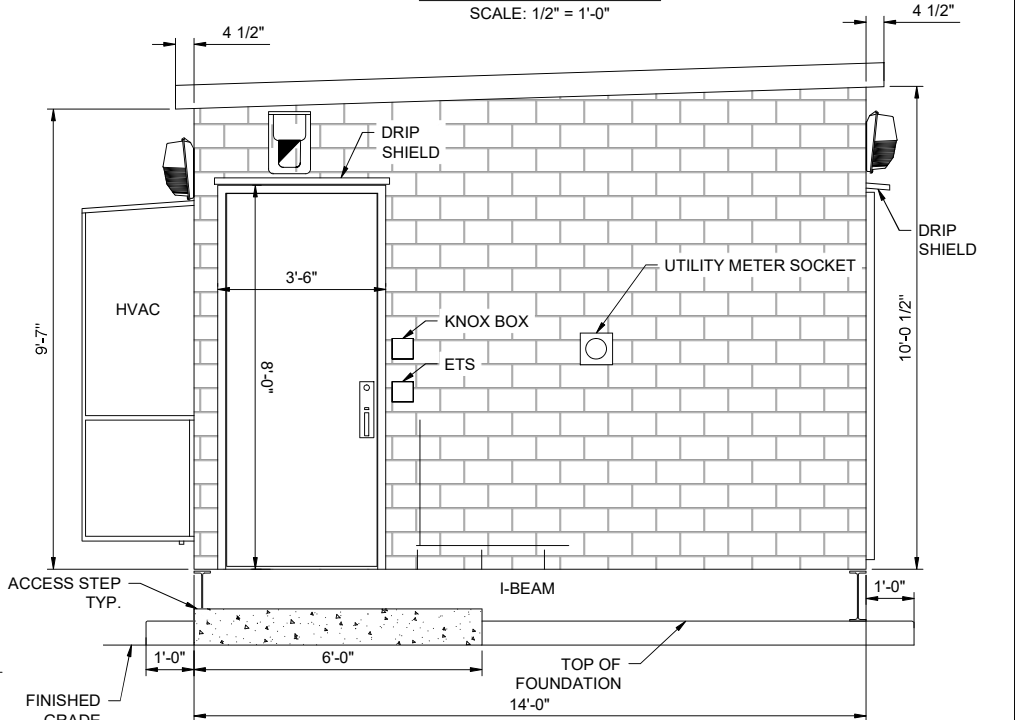
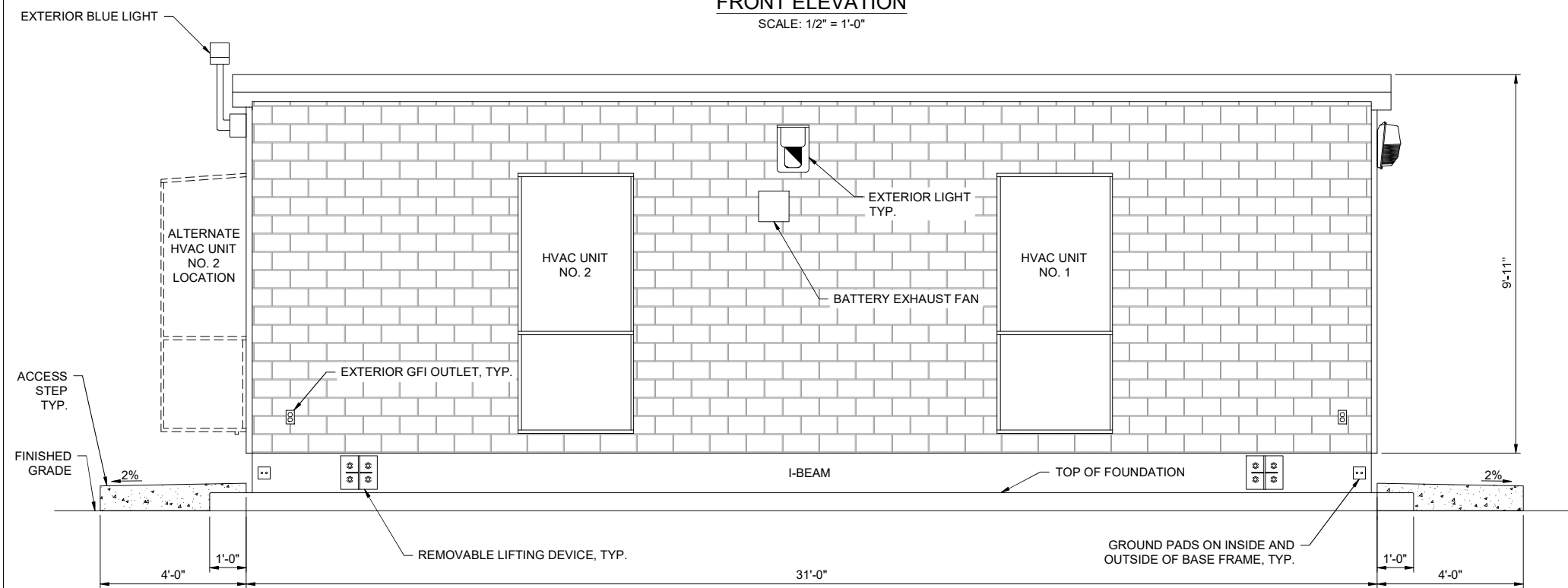
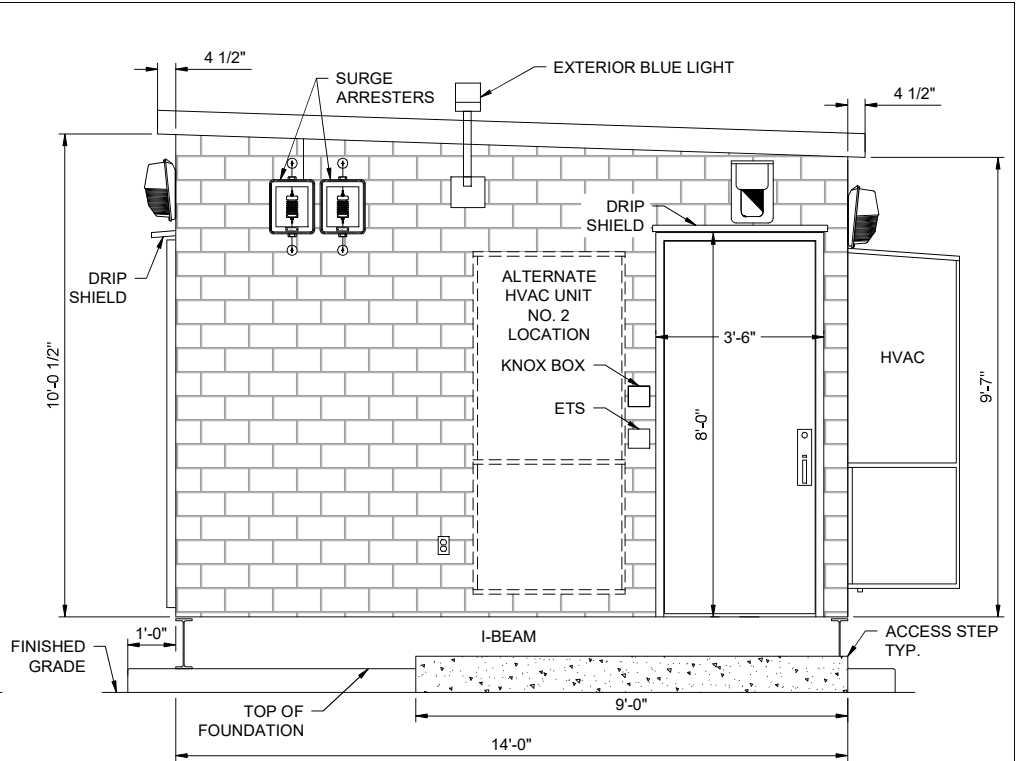
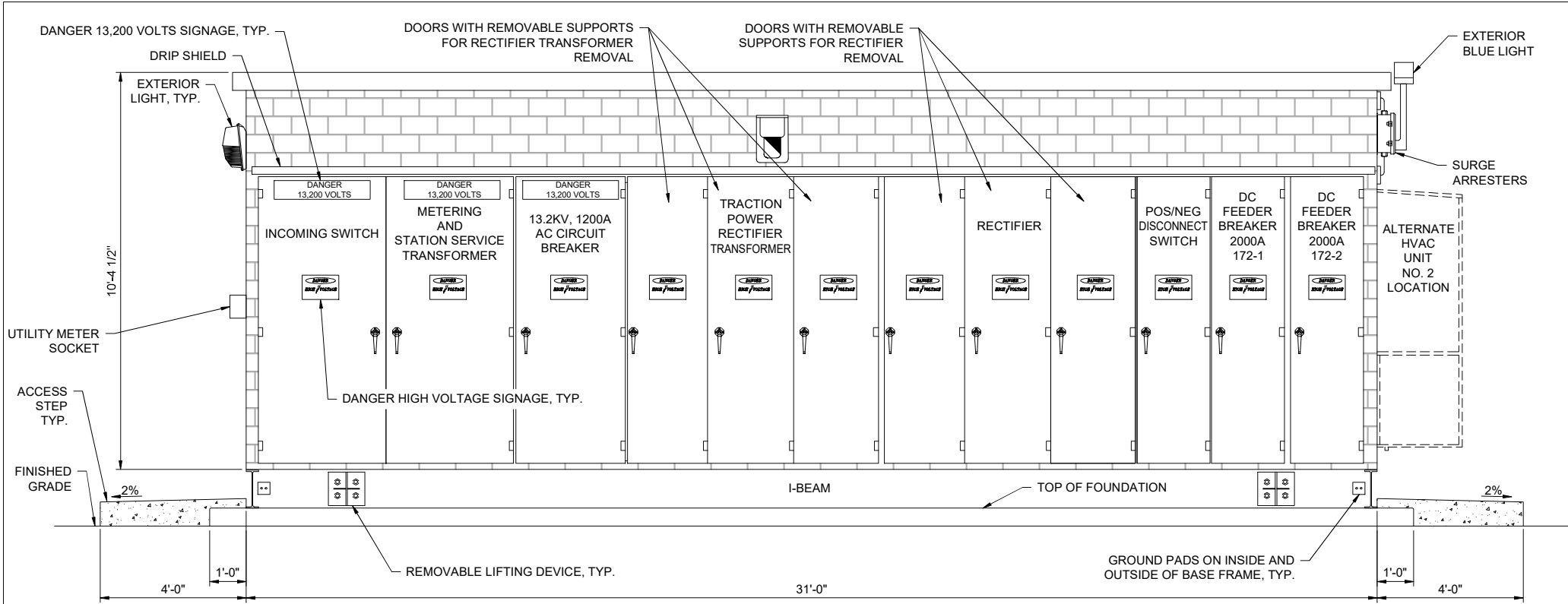
DATE: 12-23-2022

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The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

**TRACTION POWER
TYPICAL PREFABRICATED TPSS PLAN
EQUIPMENT LAYOUT PLAN**

SCALE FOR 22"x34": 3/4"=1'-0"	
FILENAME: J620-J623.DWG	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: J620	SHEET NO.: 137



DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE. SEE NOTE 7.

- NOTES:
- EQUIPMENT DIMENSIONS ARE APPROXIMATE. SUBMIT FINAL DIMENSIONS FOR APPROVAL.
 - NOT USED.
 - SEE SHEET J694 FOR FOUNDATION DETAILS.
 - METERING EQUIPMENT AND SOCKET DETAILS SUBJECT TO APPROVAL OF UTILITY.
 - VENDOR SHALL SIZE EXTERIOR EQUIPMENT DOORS AND SUPPORTS FOR RECTIFIER AND TRANSFORMER TO ALLOW FOR REMOVAL FROM OUTSIDE THE TPSS.
 - EXTERIOR OF TPSS SHALL HAVE A BRICK FASCIA. SEE CONTRACT SPECIFICATIONS FOR DETAILS.
 - CONTRACTOR SHALL MOUNT ALL EXTERIOR EQUIPMENT PER SUPPLIER INSTRUCTIONS.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW
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			CHECKED BY	PGL
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022

RideKC STREETCAR

STATE OF MISSOURI
BERNARD ALLAN GREIF
NUMBER PE-2021042286
PROFESSIONAL ENGINEER
12/22/2022

ISSUED FOR BID

DATE: 12-23-2022

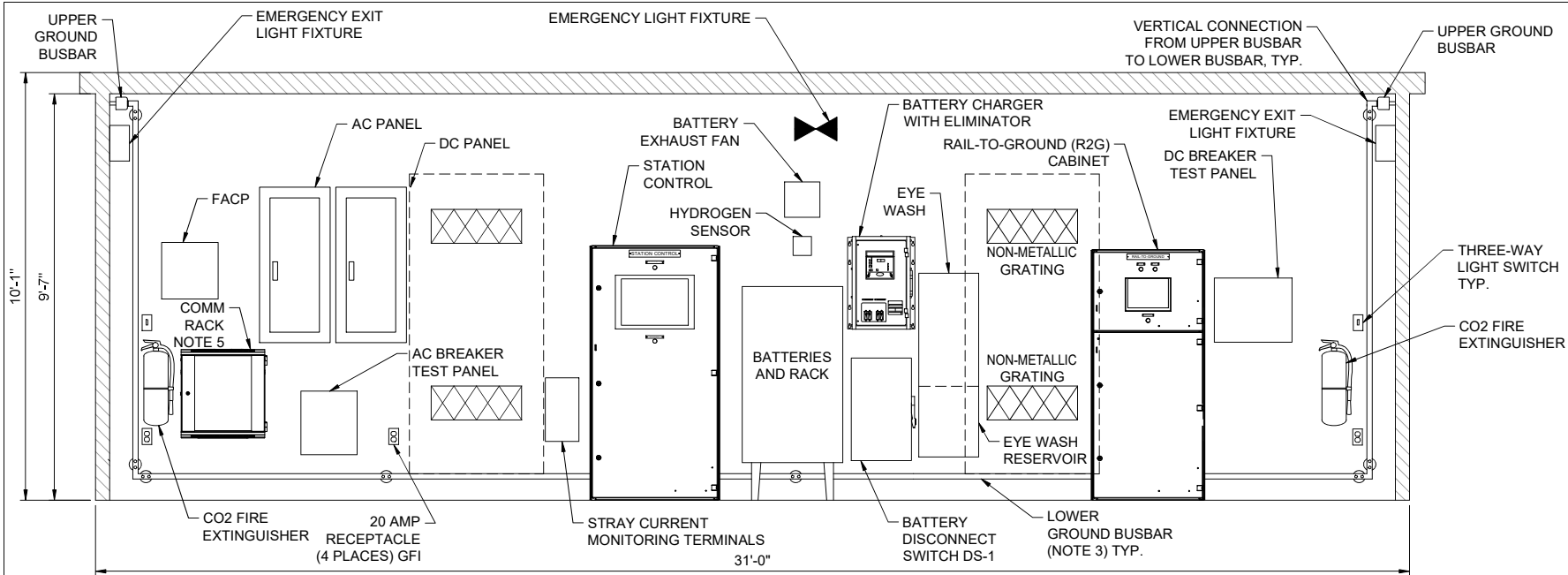
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816-360-2700
Certificate of Authority: 000856

NOT FOR CONSTRUCTION

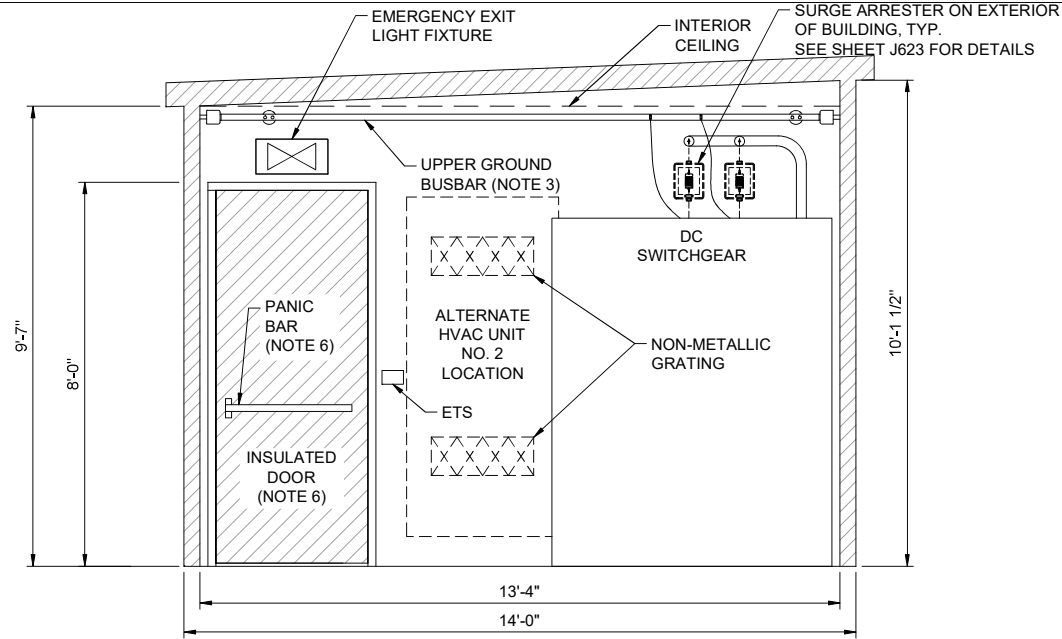
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACTION POWER
TYPICAL PREFABRICATED TPSS - EXTERIOR ELEVATIONS
ELEVATION VIEW

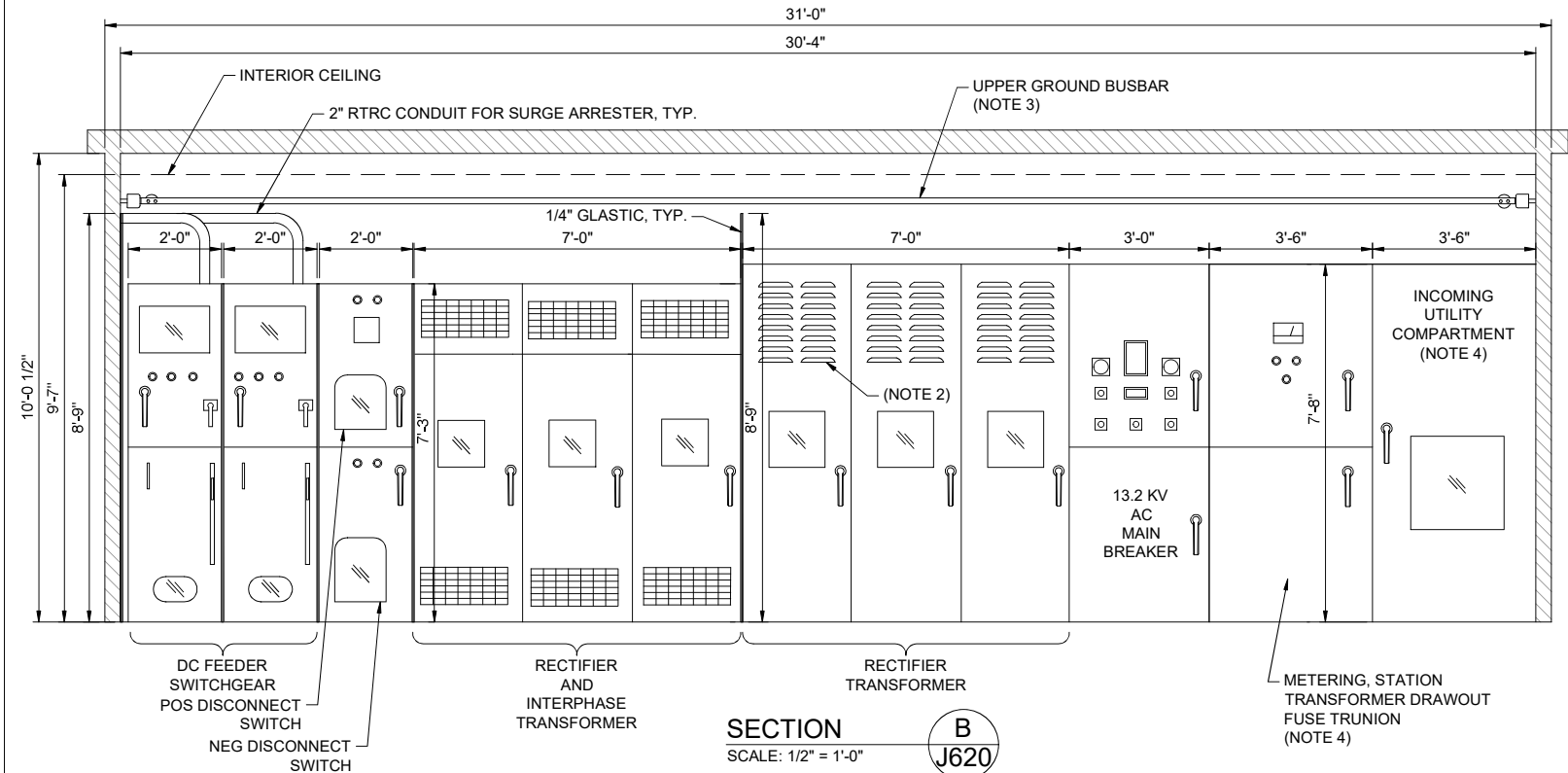
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1/2"=1'-0"
FILENAME: J620-J623.DWG
CONTRACT NO.:
CONTRACT NO. ###
VOLUME: 1
DRAWING NO.: J621
SHEET NO.: 138



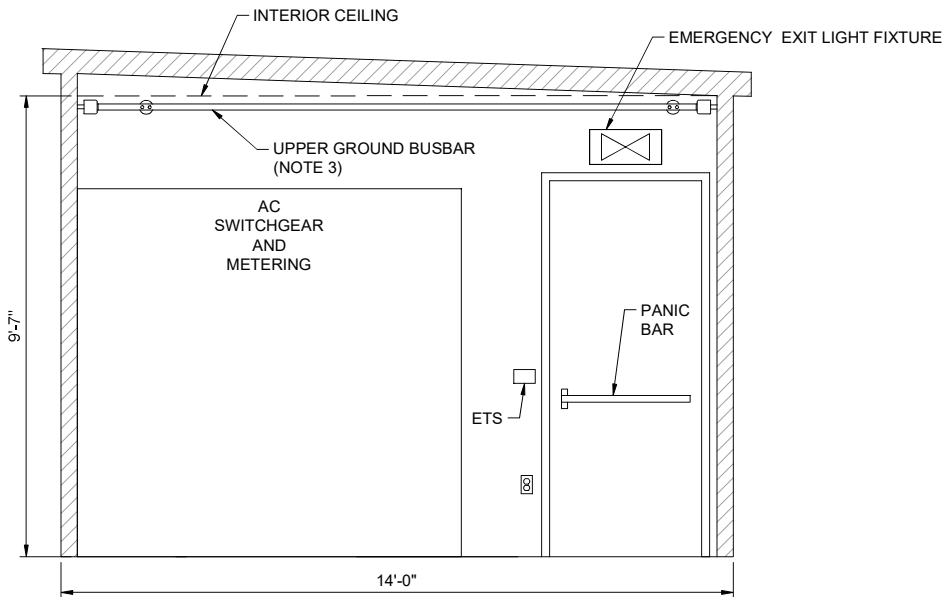
SECTION A
SCALE: 1/2" = 1'-0"
J620



SECTION C
SCALE: 1/2" = 1'-0"
J620



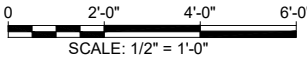
SECTION B
SCALE: 1/2" = 1'-0"
J620



SECTION D
SCALE: 1/2" = 1'-0"
J620

- NOTES:
- ALL DIMENSIONS ARE APPROXIMATE. SUBMIT FINAL DIMENSIONS FOR APPROVAL.
 - CONTRACTOR TO DETERMINE SIZE AND LOCATION OF TRANSFORMER AND RECTIFIER VENTILATION.
 - INSTALL 2" x 1/4" CONTINUOUS GROUND BUSBAR AROUND ENTIRE TPSS - CONNECT EQUIPMENT GROUNDS DIRECTLY TO GROUND BUSBAR.
 - INCOMING SWITCH, METERING EQUIPMENT, AND SOCKET DETAILS SUBJECT TO APPROVAL OF UTILITY.
 - REFER TO SPECIFICATIONS FOR COMMUNICATIONS RACK REQUIREMENTS.
 - PROVIDE 1/4" GLASTIC ON INTERIOR OF DOOR AND INSULATE OVER PANIC BARS.
 - INSTALL RECTIFIER AND DC SWITCHGEAR 2" OFF OF REAR WALL. THERE SHALL BE NO GAP BEHIND THE AC SWITCHGEAR.
 - CONTRACTOR SHALL MOUNT ALL EXTERIOR EQUIPMENT PER SUPPLIER INSTRUCTIONS.
 - A MOBILE WORKSTATION/CART SHALL BE PROVIDED. REFER TO SPECIFICATION 34 21 17 FOR DETAILS.

DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE. SEE NOTE 8.



REV	DATE	DESCRIPTION	DESIGNED BY	JDW
			CHECKED BY	PGL
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			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022



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DATE: 12-23-2022

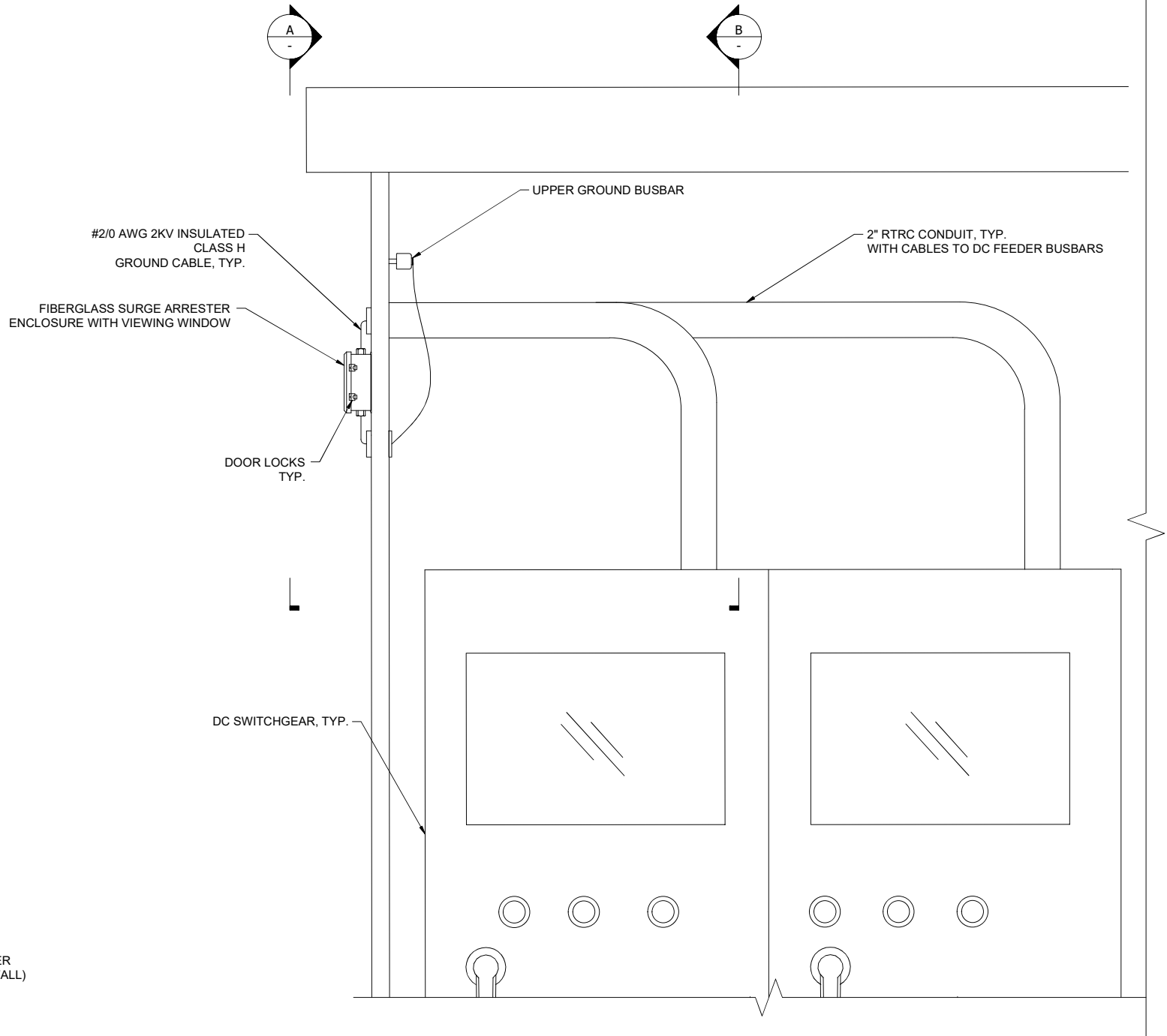
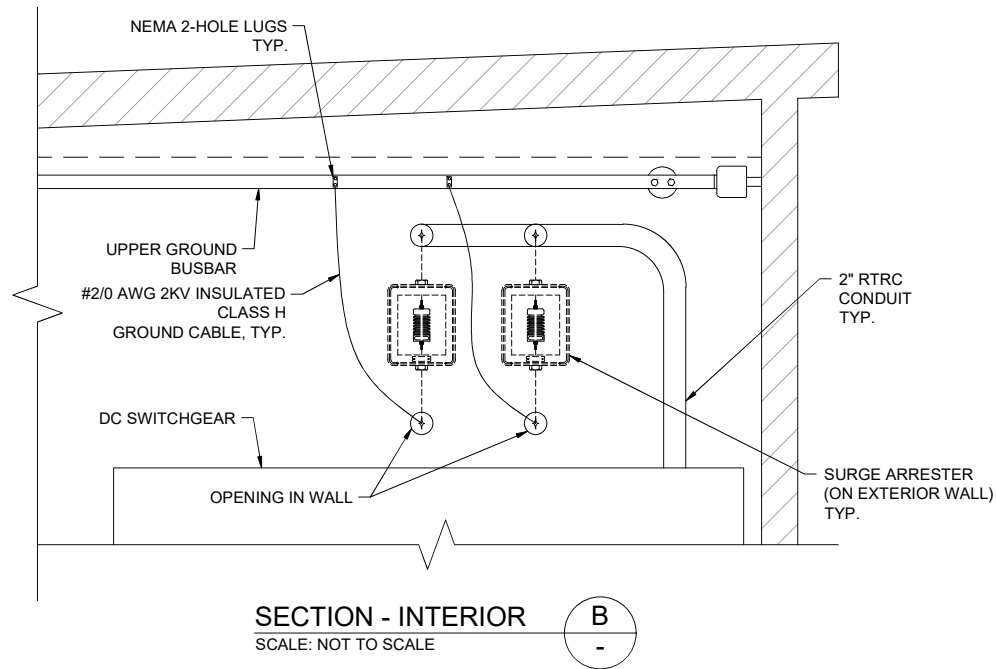
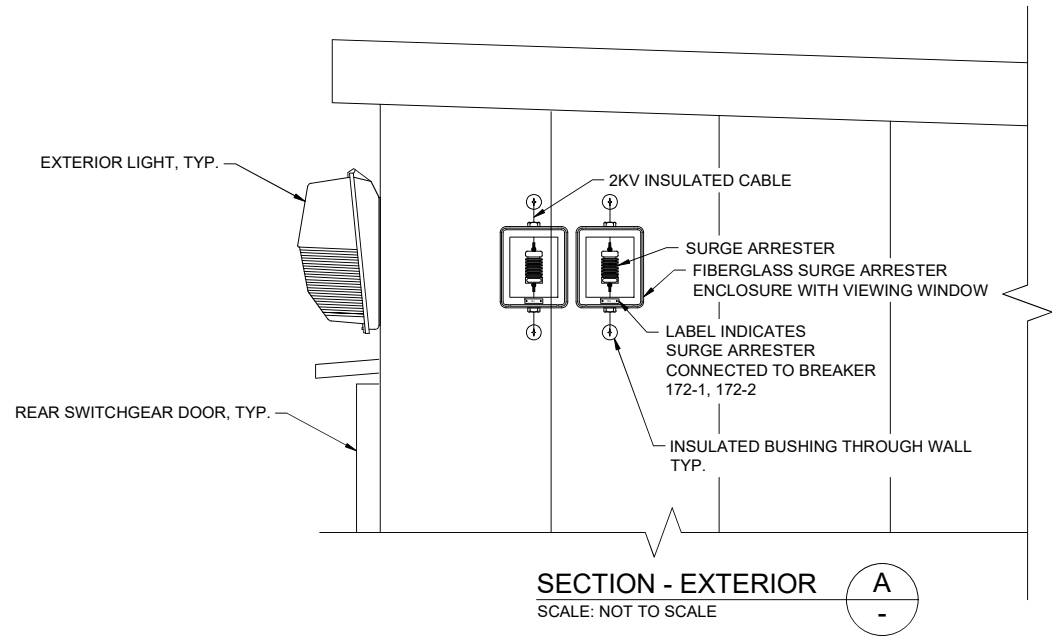
HDR Engineering, Inc.
10450 Holmes Road
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Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

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INFRASTRUCTURE SOLUTIONS
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KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACTION POWER
TYPICAL PREFABRICATED TPSS INTERIOR ELEVATIONS
INTERIOR ELEVATIONS

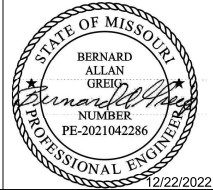
SCALE FOR 22"x34": 1/2"=1'-0"
FILENAME: J620-J623.DWG
CONTRACT NO.: CONTRACT NO. ###
VOLUME: 1
DRAWING NO.: J622
SHEET NO.: 139



- NOTES:
1. SECURE CABLES ALONG THE BRACKET.
 2. PROVIDE ENOUGH SLACK IN CABLE FOR SURGE ARRESTER TO FALL AWAY FROM BRACKET.
 3. PROVIDE FIBERGLASS ENCLOSURE WITH VIEWING WINDOW AND DOOR LOCKS.
 4. SURGE ARRESTERS SHALL BE MOUNTED AT A MINIMUM OF 9'-6" ABOVE FINISHED GRADE.
 5. CONTRACTOR SHALL MOUNT ALL EXTERIOR EQUIPMENT PER SUPPLIER INSTRUCTIONS.

DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE. SEE NOTE 5.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW
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			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022

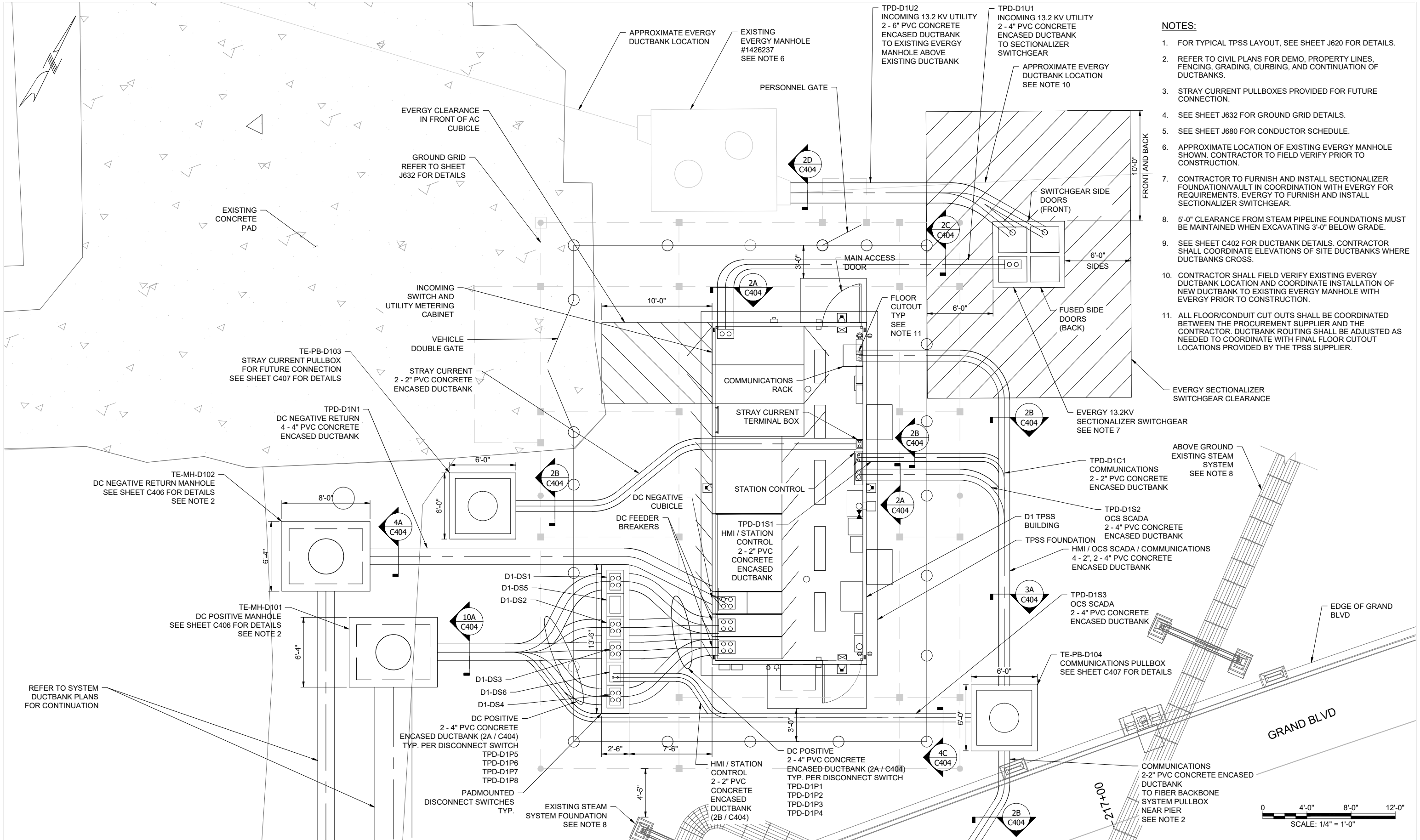


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KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACTION POWER
TYPICAL SURGER ARRESTER
INTERIOR ELEVATIONS

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: J620-J623.DWG	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: J623	SHEET NO.: 140



- NOTES:**
- FOR TYPICAL TPSS LAYOUT, SEE SHEET J620 FOR DETAILS.
 - REFER TO CIVIL PLANS FOR DEMO, PROPERTY LINES, FENCING, GRADING, CURBING, AND CONTINUATION OF DUCTBANKS.
 - STRAY CURRENT PULLBOXES PROVIDED FOR FUTURE CONNECTION.
 - SEE SHEET J632 FOR GROUND GRID DETAILS.
 - SEE SHEET J680 FOR CONDUCTOR SCHEDULE.
 - APPROXIMATE LOCATION OF EXISTING EVERGY MANHOLE SHOWN. CONTRACTOR TO FIELD VERIFY PRIOR TO CONSTRUCTION.
 - CONTRACTOR TO FURNISH AND INSTALL SECTIONALIZER FOUNDATION/VAULT IN COORDINATION WITH EVERGY FOR REQUIREMENTS. EVERGY TO FURNISH AND INSTALL SECTIONALIZER SWITCHGEAR.
 - 5'-0" CLEARANCE FROM STEAM PIPELINE FOUNDATIONS MUST BE MAINTAINED WHEN EXCAVATING 3'-0" BELOW GRADE.
 - SEE SHEET C402 FOR DUCTBANK DETAILS. CONTRACTOR SHALL COORDINATE ELEVATIONS OF SITE DUCTBANKS WHERE DUCTBANKS CROSS.
 - CONTRACTOR SHALL FIELD VERIFY EXISTING EVERGY DUCTBANK LOCATION AND COORDINATE INSTALLATION OF NEW DUCTBANK TO EXISTING EVERGY MANHOLE WITH EVERGY PRIOR TO CONSTRUCTION.
 - ALL FLOOR/CONDUIT CUT OUTS SHALL BE COORDINATED BETWEEN THE PROCUREMENT SUPPLIER AND THE CONTRACTOR. DUCTBANK ROUTING SHALL BE ADJUSTED AS NEEDED TO COORDINATE WITH FINAL FLOOR CUTOUT LOCATIONS PROVIDED BY THE TPSS SUPPLIER.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW
			CHECKED BY	PGL
			DRAWN BY	JDW
			CHECKED BY	PGL
			APPROVED BY	NKS

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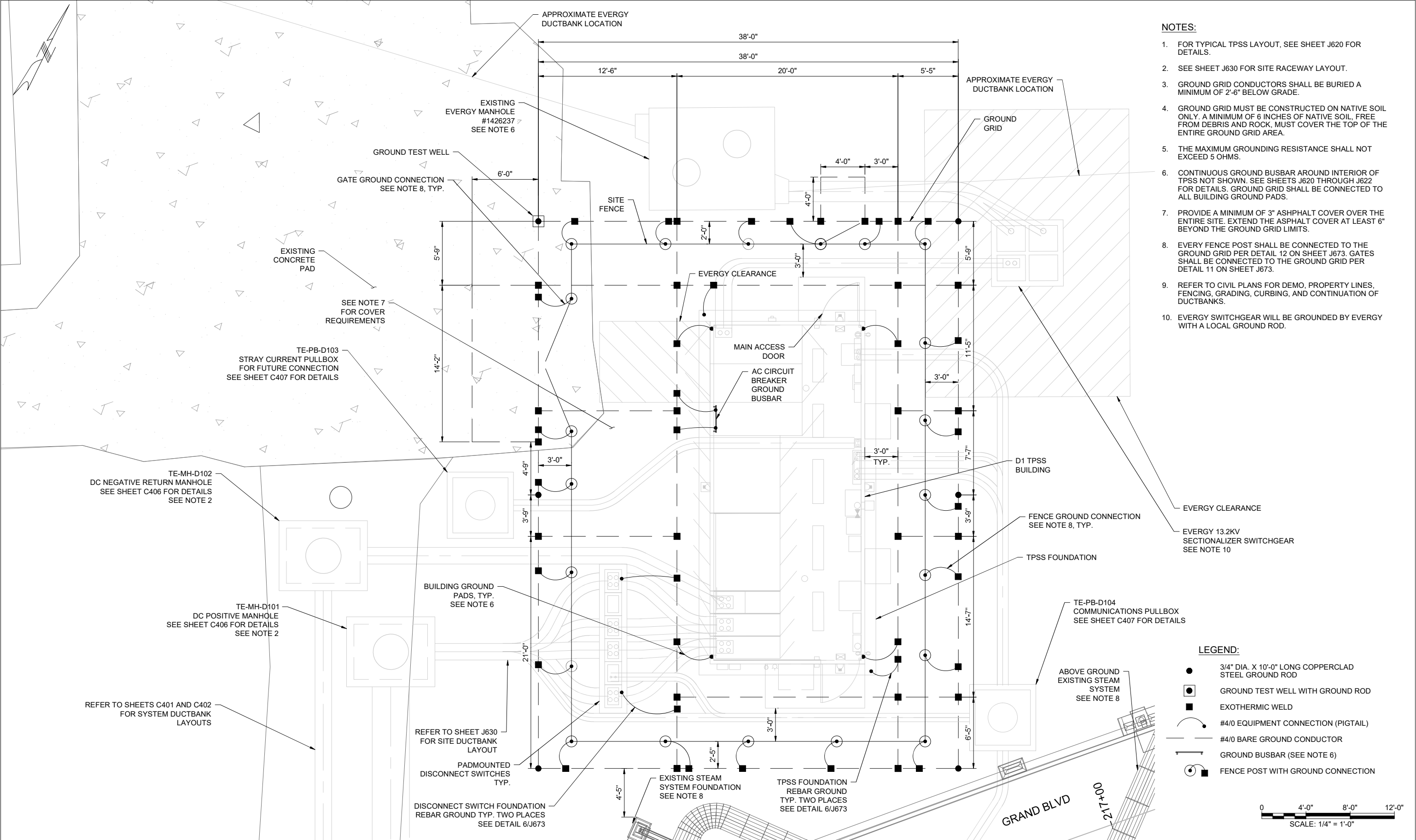
12/23/2022

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KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

**TRACTION POWER
TPSS D1
SITE RACEWAY LAYOUT**

SCALE FOR 22"x34":
1/4" = 1'-0"
J630-J632.DWG
CONTRACT NO.:
VOLUME:
1
DRAWING NO.: J630
SHEET NO.: 141



- NOTES:**
- FOR TYPICAL TPSS LAYOUT, SEE SHEET J620 FOR DETAILS.
 - SEE SHEET J630 FOR SITE RACEWAY LAYOUT.
 - GROUND GRID CONDUCTORS SHALL BE BURIED A MINIMUM OF 2'-6" BELOW GRADE.
 - GROUND GRID MUST BE CONSTRUCTED ON NATIVE SOIL ONLY. A MINIMUM OF 6 INCHES OF NATIVE SOIL, FREE FROM DEBRIS AND ROCK, MUST COVER THE TOP OF THE ENTIRE GROUND GRID AREA.
 - THE MAXIMUM GROUNDING RESISTANCE SHALL NOT EXCEED 5 OHMS.
 - CONTINUOUS GROUND BUSBAR AROUND INTERIOR OF TPSS NOT SHOWN. SEE SHEETS J620 THROUGH J622 FOR DETAILS. GROUND GRID SHALL BE CONNECTED TO ALL BUILDING GROUND PADS.
 - PROVIDE A MINIMUM OF 3" ASPHALT COVER OVER THE ENTIRE SITE. EXTEND THE ASPHALT COVER AT LEAST 6" BEYOND THE GROUND GRID LIMITS.
 - EVERY FENCE POST SHALL BE CONNECTED TO THE GROUND GRID PER DETAIL 12 ON SHEET J673. GATES SHALL BE CONNECTED TO THE GROUND GRID PER DETAIL 11 ON SHEET J673.
 - REFER TO CIVIL PLANS FOR DEMO, PROPERTY LINES, FENCING, GRADING, CURBING, AND CONTINUATION OF DUCTBANKS.
 - EVERGY SWITCHGEAR WILL BE GROUNDED BY EVERGY WITH A LOCAL GROUND ROD.

- LEGEND:**
- 3/4" DIA. X 10'-0" LONG COPPERCLAD STEEL GROUND ROD
 - GROUND TEST WELL WITH GROUND ROD
 - EXOTHERMIC WELD
 - #4/0 EQUIPMENT CONNECTION (PIGTAIL)
 - #4/0 BARE GROUND CONDUCTOR
 - GROUND BUSBAR (SEE NOTE 6)
 - FENCE POST WITH GROUND CONNECTION

REV	DATE	DESCRIPTION	DESIGNED BY	JDW
			CHECKED BY	PGL
			DRAWN BY	JDW
			CHECKED BY	PGL
			APPROVED BY	NKS

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DATE: 12/23/2022

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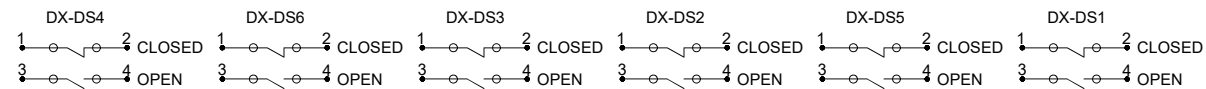
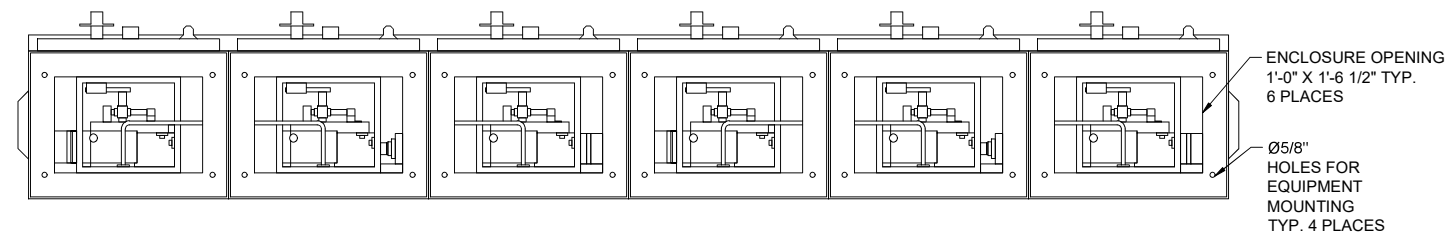
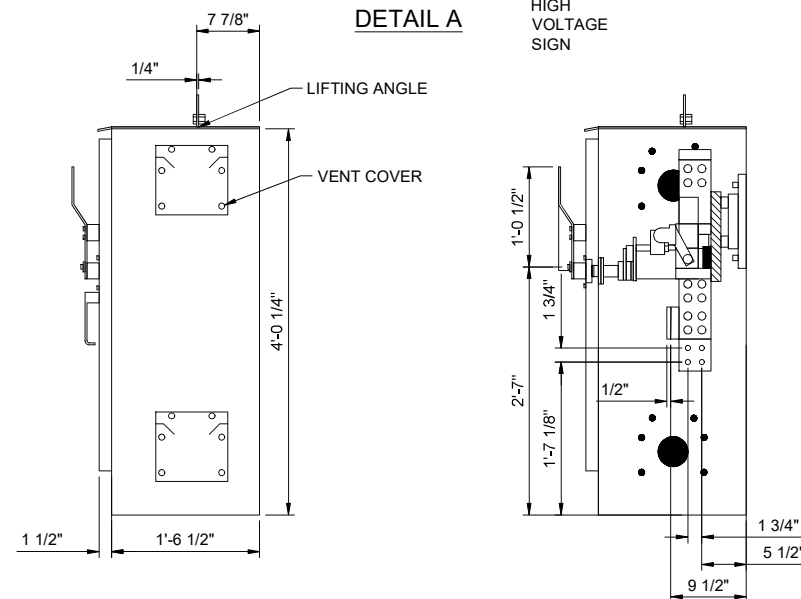
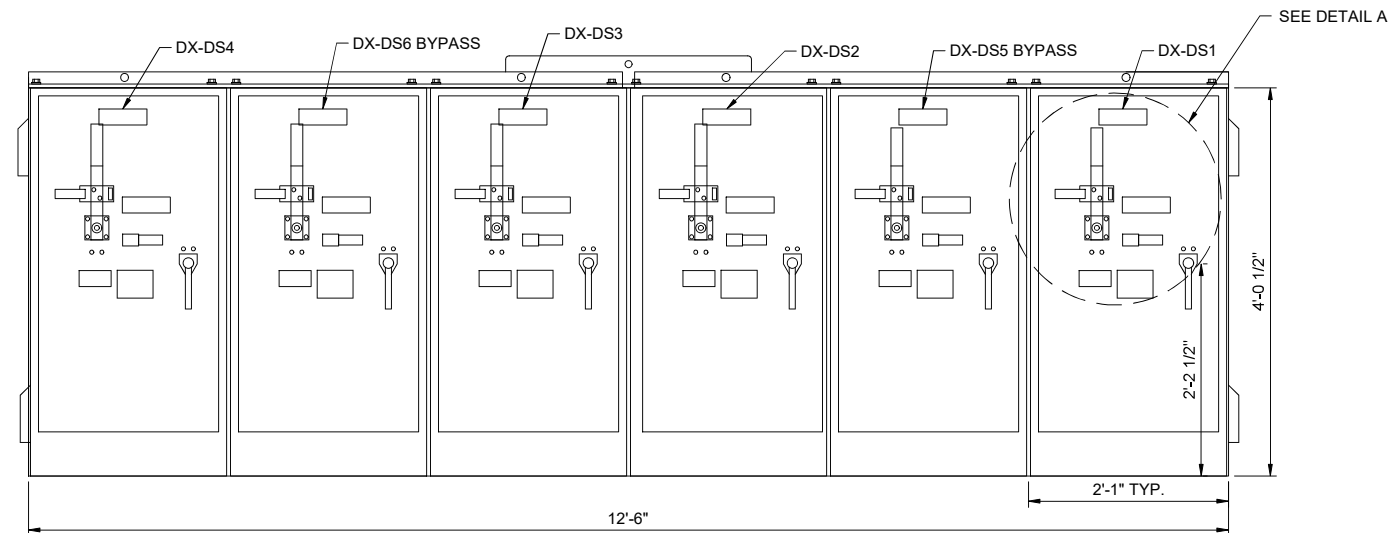
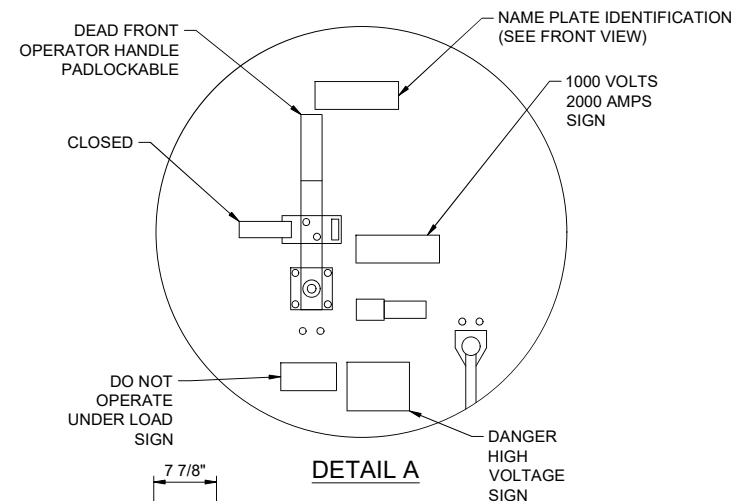
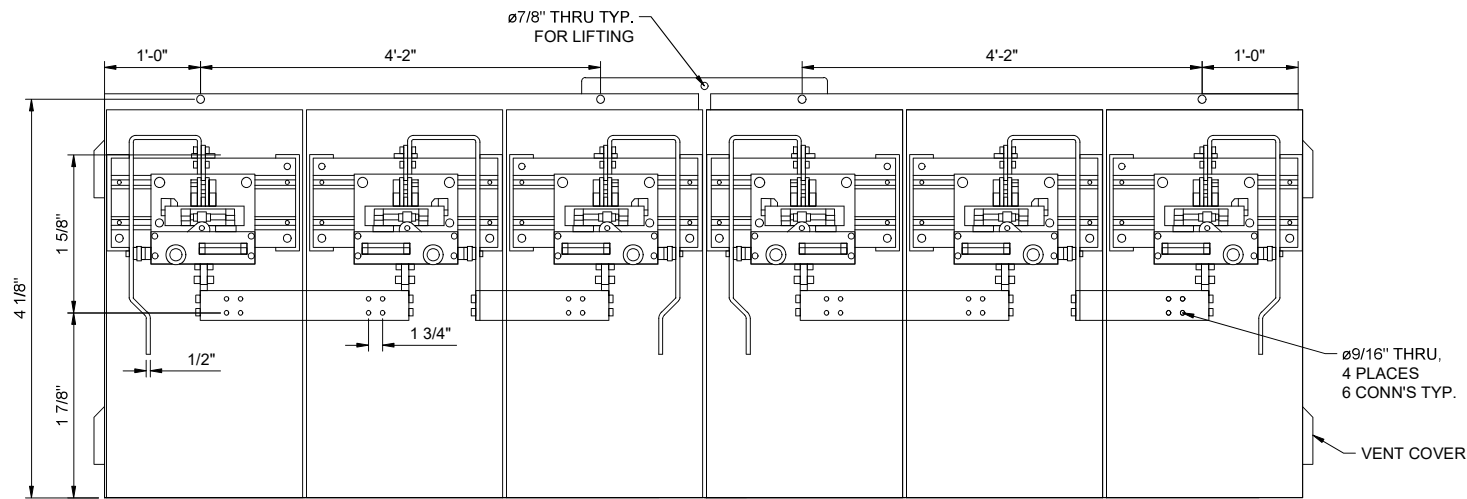
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KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACTION POWER
TPSS D1
GROUND GRID LAYOUT

SCALE FOR 22"x34":
1/4" = 1'-0"
FILENAME:
J630-J632.DWG
CONTRACT NO.:
CONTRACT NO. ###
VOLUME:
1
DRAWING NO.: J632 SHEET NO.: 142



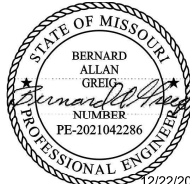
SEE NOTE 2

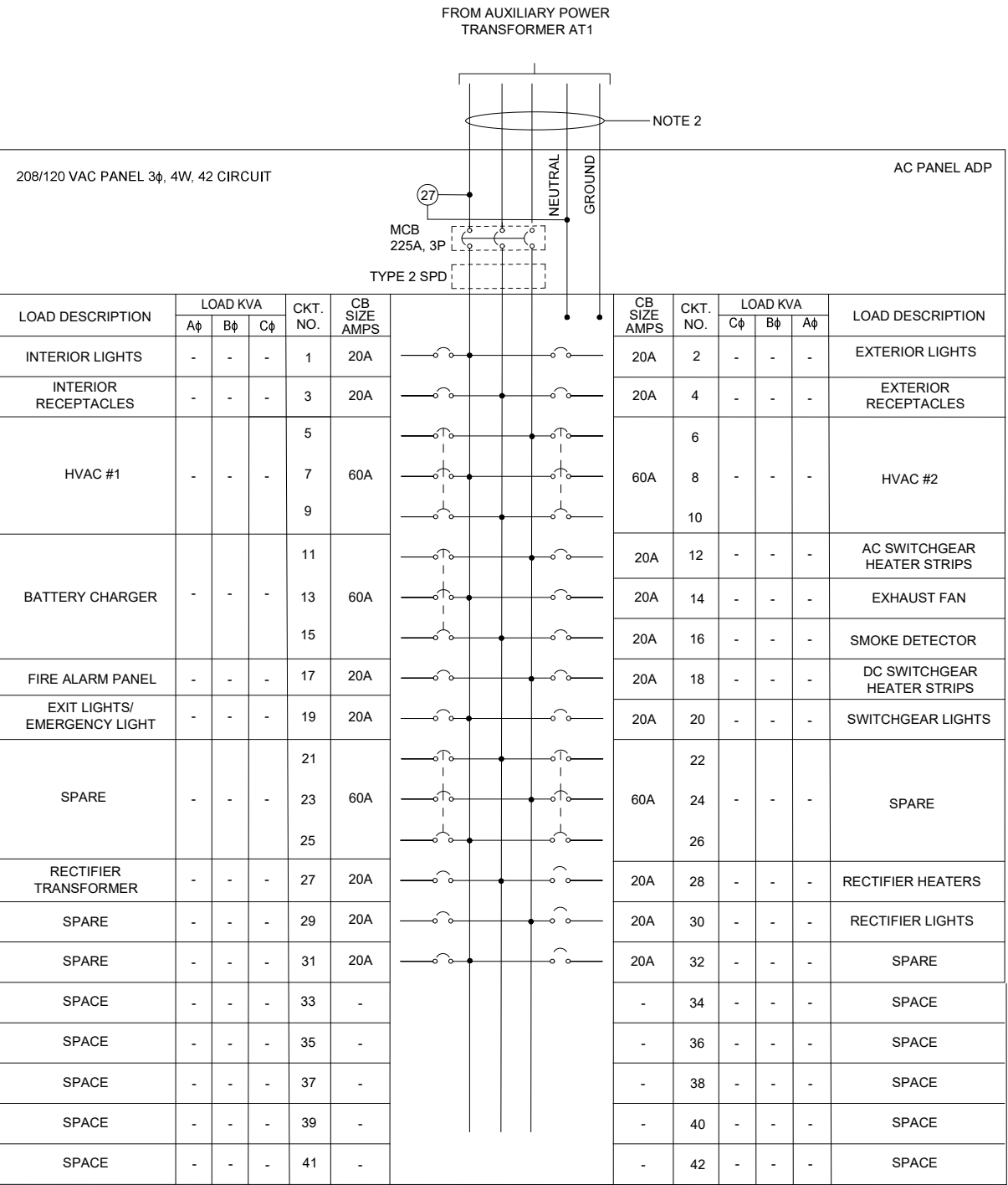
DISCONNECT SWITCH FEATURES:

- (6) 2000 AMP DISCONNECT SWITCHES
- 1000VDC SWITCH & BUSBAR INSULATION RATING
- SINGLE POLE, SINGLE THROW, BOLTED PRESSURE TYPE SWITCHES
- NON-FUSIBLE
- NON-LOAD BREAK OPERATION
- 2000 AMP MAIN BUSBAR CAPACITY
- SILVER PLATED TERMINALS
- 1 NO./NC AUX. CONTACT FOR POSITION INDICATION
- FRONT OPERATED WITH PADLOCK FEATURE
- OPERATOR HANDLE AND DOOR ARE MECHANICALLY INTERLOCKED TO PREVENT DOOR OPENING WITH THE SWITCH IN THE CLOSED POSITION
- OPERATOR HANDLE GROUNDED
- NEMA 4X PAD MOUNTED FIBERGLASS ENCLOSURE:
 - ANSI 61 GRAY EXTERIOR AND WHITE INTERIOR
 - CONTINUOUS STAINLESS STEEL HINGE
 - DOOR PERIMETER IS FULLY GASKETED
 - 3 POINT HANDLE IS PADLOCKABLE
- APPROX. WT. - 1500 LBS

NOTES:

- DIMENSIONS PROVIDED ARE TYPICAL. FINAL DIMENSIONS SHALL BE DETERMINED BY DISCONNECT SWITCH MANUFACTURER.
- EACH DISCONNECT SWITCH POSITION STATUS INDICATIONS SHALL BE REPORTED TO THE SAS PLC. SEE SITE SPECIFIC CONDUCTOR SCHEDULE FOR CABLE REQUIREMENTS.
- PAD-MOUNTED DISCONNECT SWITCHES FURNISHED AND INSTALLED BY THE CONTRACTOR.

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			DRAWN BY	JDW										
			CHECKED BY	PGL										
			APPROVED BY	NKS										
PLOT DATE: 12/21/2022			5:11:46 PM		DATE		12/23/2022		NOT FOR CONSTRUCTION					



AC PANEL ADP - PANEL SCHEDULE

SCALE: NOT TO SCALE

NOTES:

- FOR COORDINATION PURPOSES ONLY. REFER TO VENDOR'S AC PANELBOARD DRAWING FOR AC PANEL LAYOUT
- ALL INTERNAL BUILDING WIRING AND FINAL BREAKER SIZES TO BE DETERMINED BY VENDOR (OWNER SUPPLIED) IN COORDINATION WITH THE CONTRACTOR (THIS CONTRACT).
- SHOP DRAWINGS TO BE PROVIDED BY THE OWNER WHEN AVAILABLE.
- DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED AND SHOP DRAWINGS SUPPLIED WHEN AVAILABLE.

DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

NI-CD BATTERY

125VDC

DISCONNECT SWITCH DS-1

100A

100A

NOTE 2

27

MCB 150A 2P

125 VDC PANEL, 2W, 40 CIRCUIT

DC PANEL DDP

LOAD DESCRIPTION	LOAD WATTS	CB CKT. NO.	SIZE AMPS		SIZE AMPS	CB CKT. NO.	LOAD WATTS	LOAD DESCRIPTION
BATTERY CHARGER INPUT	-	1	50A		20A	2	-	AC SWITCHGEAR
		3				4		
DC BREAKER TEST CABINET	-	5	20A		20A	6	-	SWITCH POSITION LIGHTS
		7				8		
SPARE	-	9	20A		30A	10	-	DC SWITCHGEAR POSITIVE 89P CUBICLE
		11				12		
ADC BREAKER TEST CABINET	-	13	20A		20A	14	-	DC SWITCHGEAR NEGATIVE 89N CUBICLE
		15				16		
STATION CONTROL CABINET	-	17	20A		20A	18	-	DC FEEDER 1
		19				20		
SPARE	-	21	20A		20A	22	-	DC FEEDER 2
		23				24		
SPARE	-	25	20A		20A	26	-	RECTIFIER TRANSFORMER
		27				28		
SPARE	-	29	20A		20A	30	-	SPARE
		31				32		
SPARE	-	33	20A		20A	34	-	SPARE
		35				36		
SPARE	-	37	20A		20A	38	-	SPARE
		39				40		

DC PANEL DDP - PANEL SCHEDULE

SCALE: NOT TO SCALE

DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW
			CHECKED BY	PGL
			DRAWN BY	JDW
			CHECKED BY	PGL
			APPROVED BY	NKS

12/21/2022

5:12:50 PM

12/23/2022

STATE OF MISSOURI

BERNARD ALLAN GREIG

NUMBER

PE-2021042286

PROFESSIONAL ENGINEER

12/22/2022

ISSUED FOR BID

DATE: 12-23-2022

HDR

HDR Engineering, Inc.

10450 Holmes Road

Suite 600

Kansas City, MO 64131-3471

816-360-2700

Certificate of Authority: 000856

HNTB

The HNTB COMPANIES

INFRASTRUCTURE SOLUTIONS

300 Apollo Drive

Chelmsford, MA 01824

Phone: 978-905-4000

Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACTION POWER

125V DC PANEL DDP

PANEL SCHEDULE

SCALE FOR 22"x34":

NOT TO SCALE

FILENAME:

J643.DWG

CONTRACT NO.:

CONTRACT NO. ###

VOLUME:

1

DRAWING NO.:

J643

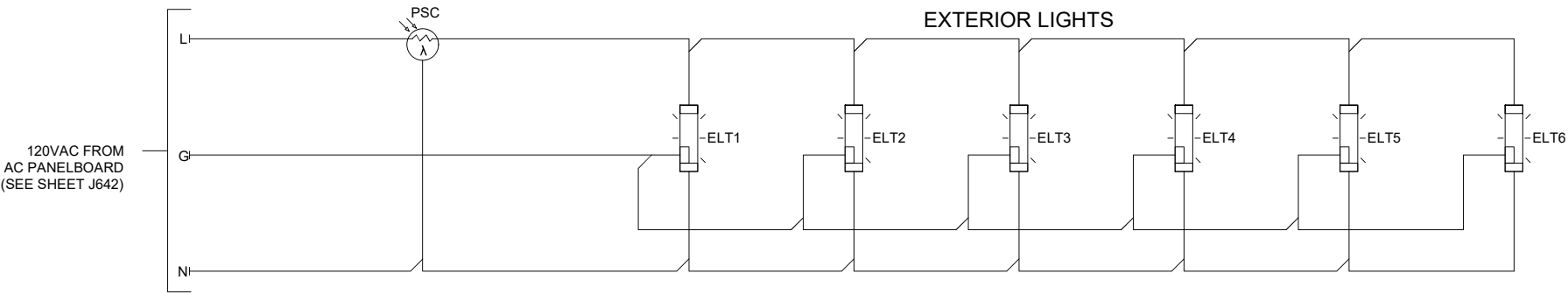
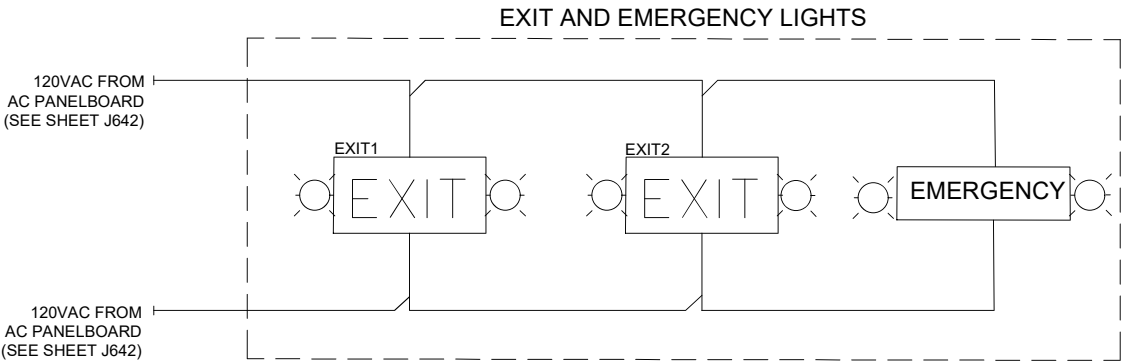
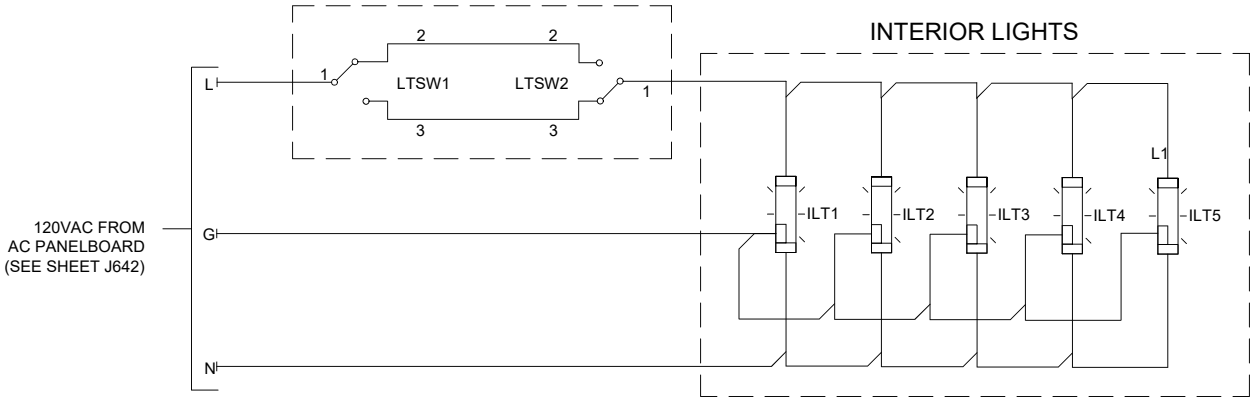
SHEET NO.:

145

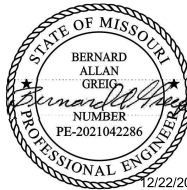
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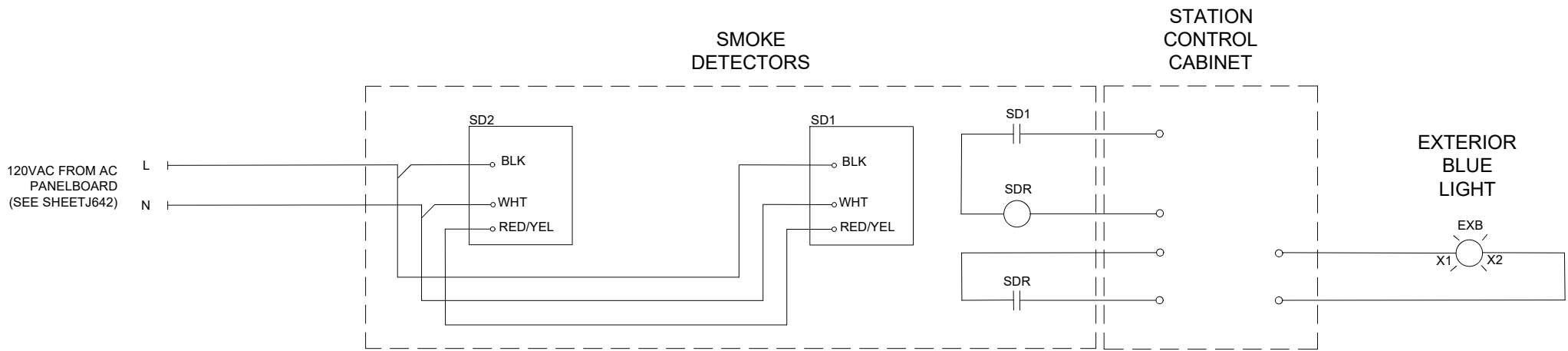
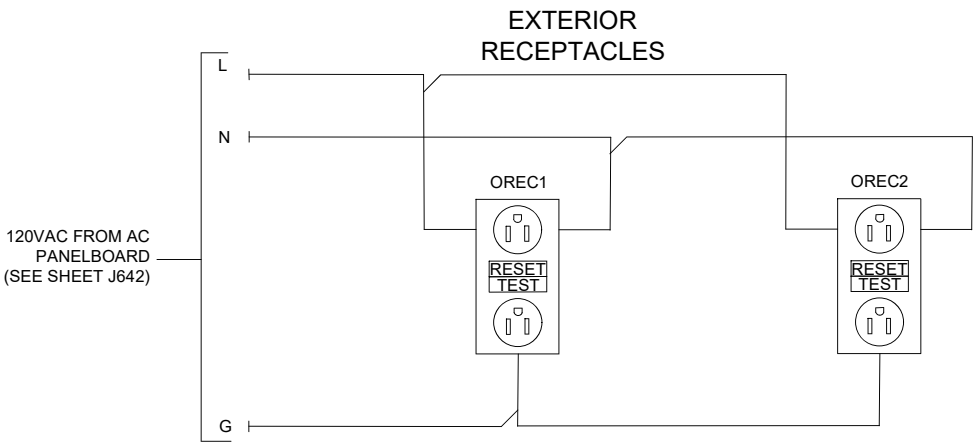
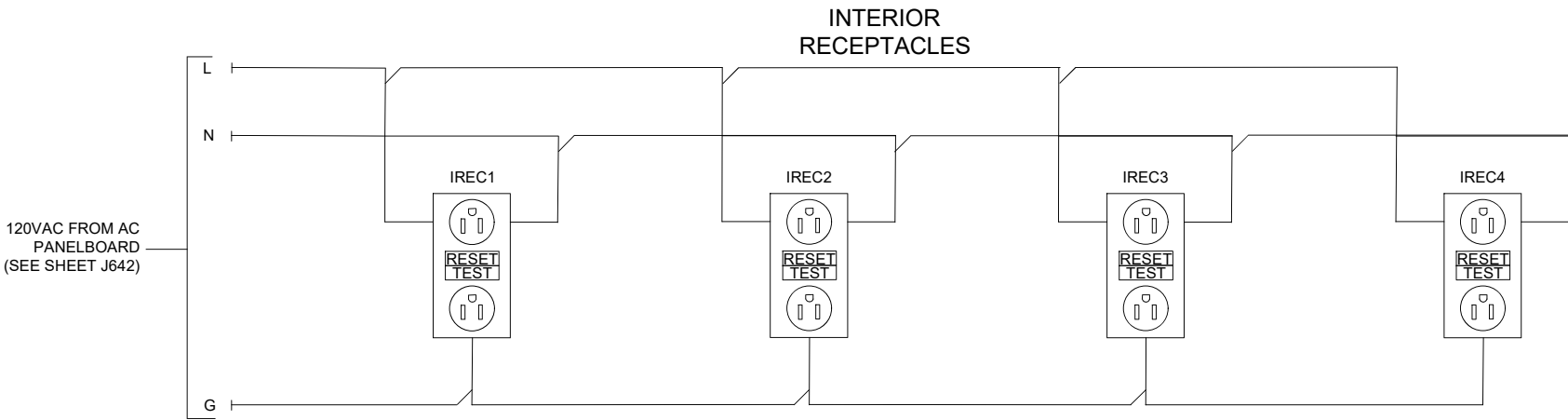
NOTES:

- 1. FINAL SCHEMATICS, LOGIC, AND FUNCTIONAL REQUIREMENTS SHALL BE DEVELOPED BY THE VENDOR.
- 2. EQUIPMENT CUBICLE LIGHTING AND HEATING TO BE PROPOSED BY VENDOR. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.
- 3. EQUIPMENT SPECIFIC SCHEMATICS (AC SWITCHGEAR, DC SWITCHGEAR, RECTIFIER TRANSFORMER, RECTIFIER, ETC.) SHALL BE PROPOSED BY VENDOR. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.



DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

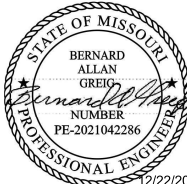
REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER TYPICAL TPSS LIGHTING SCHEMATIC	SCALE FOR 22"x34": NOT TO SCALE FILENAME: J644.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1	
			CHECKED BY	PGL										
			DRAWN BY	JDW										
			CHECKED BY	PGL										
			APPROVED BY	NKS										
PLOT DATE: 12/21/2022			5:13:15 PM		DATE		12/23/2022		NOT FOR CONSTRUCTION				DRAWING NO.: J644	

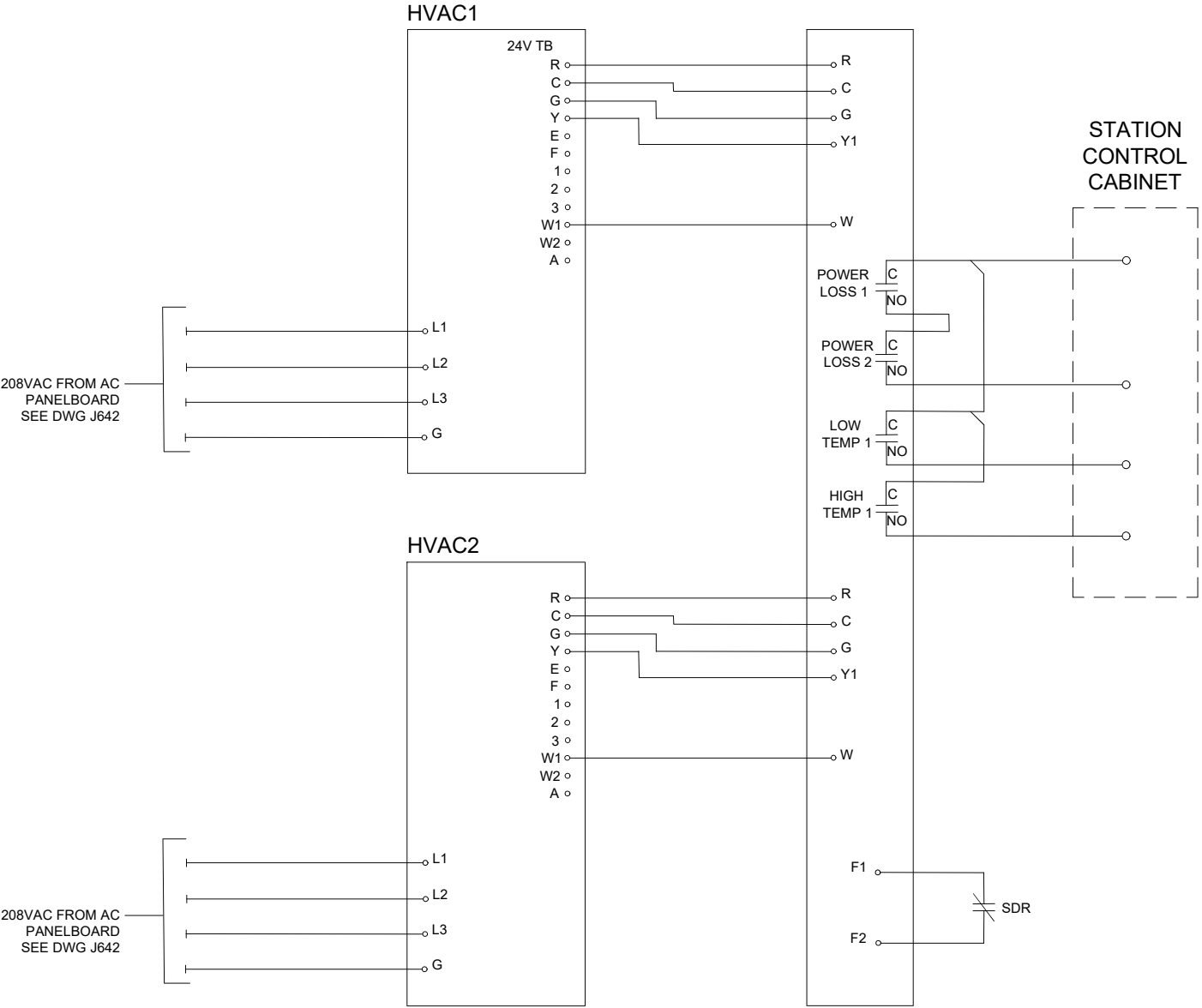


DRAWING FOR CONTRACTOR COORDINATION
PURPOSES. TPSS SHALL BE OWNER SUPPLIED
WHEN AVAILABLE.

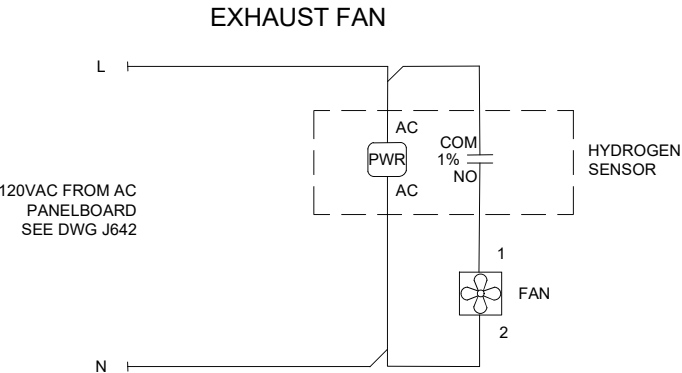
NOTES:

1. FINAL SCHEMATICS, LOGIC, AND FUNCTIONAL REQUIREMENTS SHALL BE DEVELOPED BY THE VENDOR. SEE SHOP DRAWING SUPPLIED BY BUILDING VENDOR VIA OWNER.
2. EQUIPMENT SPECIFIC SCHEMATICS (AC SWITCHGEAR, DC SWITCHGEAR, RECTIFIER TRANSFORMER, RECTIFIER, ETC.) SHALL BE PROPOSED BY VENDOR. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.

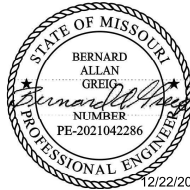
REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":			
			CHECKED BY	PGL			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270		NOT TO SCALE	FILENAME:		
			DRAWN BY	WAC								CONTRACT NO.:	
			CHECKED BY	PGL								CONTRACT NO. ###	VOLUME:
			APPROVED BY	NKS								1	DRAWING NO.:
PLOT DATE: 12/21/2022			5:13:32 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION			SHEET NO.:			
									J645	147			



- NOTES:
1. FINAL SCHEMATICS, LOGIC, AND FUNCTIONAL REQUIREMENTS SHALL BE DEVELOPED BY THE VENDOR. SEE SHOP DRAWING SUPPLIED BY BUILDING VENDOR VIA OWNER.
 2. EQUIPMENT SPECIFIC SCHEMATICS (AC SWITCHGEAR, DC SWITCHGEAR, RECTIFIER TRANSFORMER, RECTIFIER, ETC.) SHALL BE PROPOSED BY VENDOR. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.

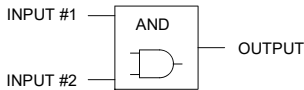


DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER TYPICAL TPSS HVAC AND VENTILATION SCHEMATIC	SCALE FOR 22"x34": NOT TO SCALE FILENAME: J646.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: SHEET NO.:
			CHECKED BY	PGL									
			DRAWN BY	WAC									
			CHECKED BY	PGL									
			APPROVED BY	NKS									
PLOT DATE: 12/21/2022			5:13:46 PM		DATE		12/23/2022		NOT FOR CONSTRUCTION				J646

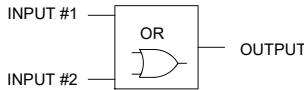
- NOTES:
- FOR COORDINATION ONLY. FINAL SCHEMATICS, LOGIC, AND FUNCTIONAL REQUIREMENTS SHALL BE DEVELOPED BY THE VENDOR. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.

AND GATE



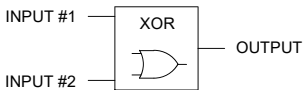
INPUT #1	INPUT #2	OUTPUT
0	0	0
0	1	0
1	0	0
1	1	1

OR GATE



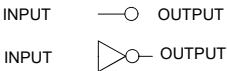
INPUT #1	INPUT #2	OUTPUT
0	0	0
0	1	1
1	0	1
1	1	1

EXCLUSIVE OR GATE



INPUT #1	INPUT #2	OUTPUT
0	0	0
0	1	1
1	0	1
1	1	0

SIGNAL INVERSION



INPUT	OUTPUT
0	1
1	0

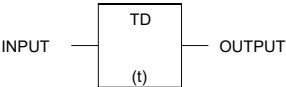
SET OVER RESET OPERATOR



INPUT #1	INPUT #2	OUTPUT (LATCHED)
0	0	PREVIOUS STATE
0	1	0
1	0	1
1	1	PREVIOUS STATE

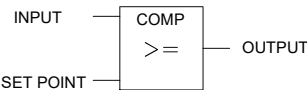
OUTPUT CHANGES STATE ONLY UPON RISING EDGE OF INPUT SIGNAL

TIME DELAY



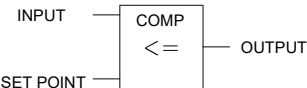
A RISING EDGE ON THE INPUT STARTS THE TIMER(t). THE TIMER COUNTS AS LONG AS THE INPUT IS HIGH. IF THE TIMER EXPIRES WHILE THE INPUT IS HIGH THE OUTPUT BECOMES ACTIVE. A FALLING INPUT EDGE RESETS THE TIMER.

GREATER THAN COMPARATOR



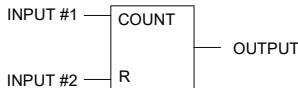
IF THE INPUT VALUE IS GREATER THAN OR EQUAL TO THE SET POINT, THE OUTPUT BECOMES ACTIVE.

LESS THAN COMPARATOR



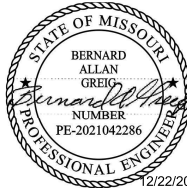
IF THE INPUT VALUE IS LESS THAN OR EQUAL TO THE SET POINT, THE OUTPUT BECOMES ACTIVE.

COUNTER

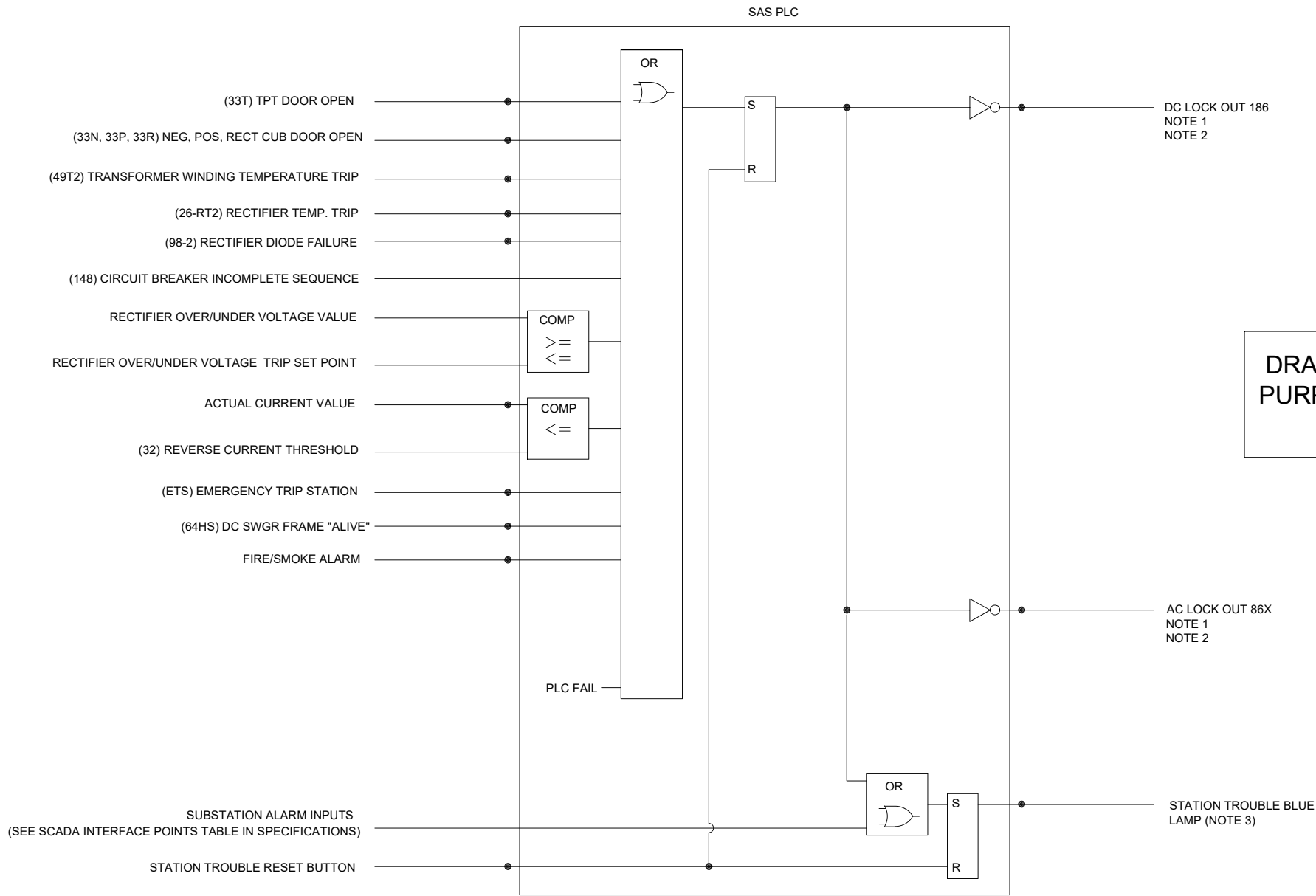


EACH TIME INPUT #1 IS PULSED HIGH THE COUNTER INCREMENTS AND THE OUTPUT REFLECTS THE COUNT VALUE. WHEN INPUT #2 IS PULSED HIGH THE COUNT VALUE IS RESET.

DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022		 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 Chelmsford, MA 01824 816-360-2700 Phone: 978-905-4000 Certificate of Authority: 000856	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER LOGIC DIAGRAMS SYMBOLS AND LEGEND	SCALE FOR 22"x34": NOT TO SCALE FILENAME: J648.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: SHEET NO.: J648 149	
			CHECKED BY	PGL										
			DRAWN BY	WAC										
			CHECKED BY	PGL										
			APPROVED BY	NKS										
PLOT DATE: 12/21/2022			5:14:00 PM		DATE		12/23/2022		NOT FOR CONSTRUCTION					

SUBSTATION LOCKOUT AND ALARM LOGIC

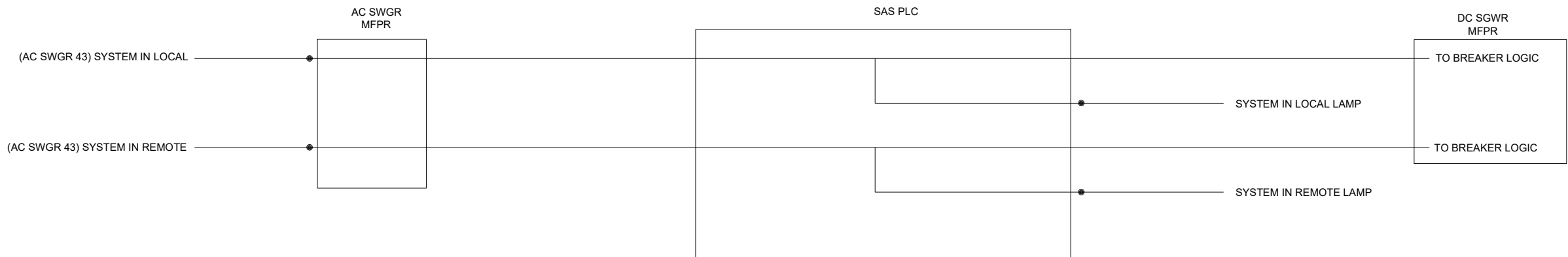


NOTES:

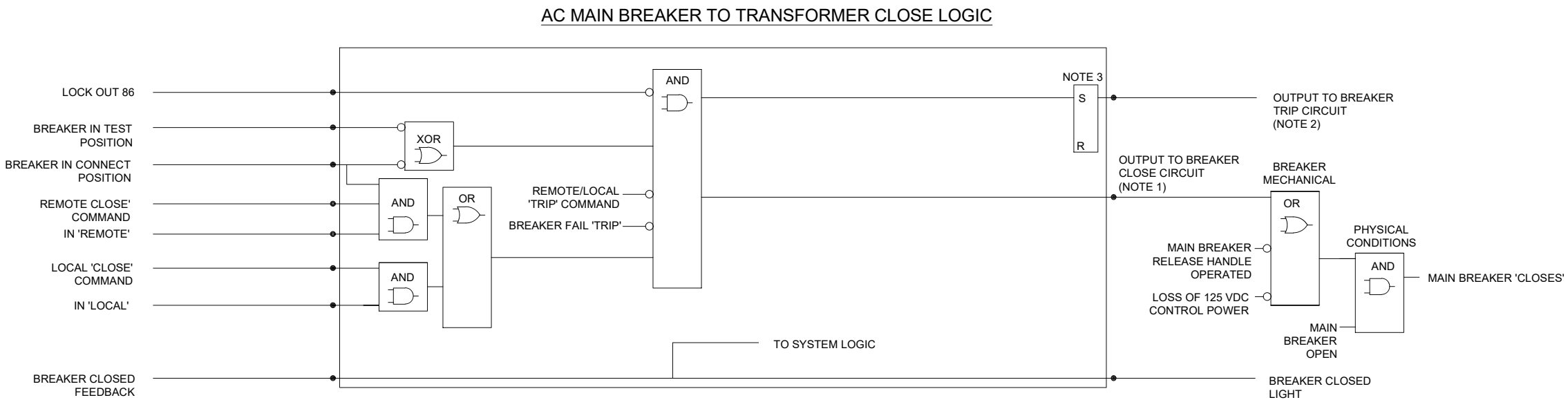
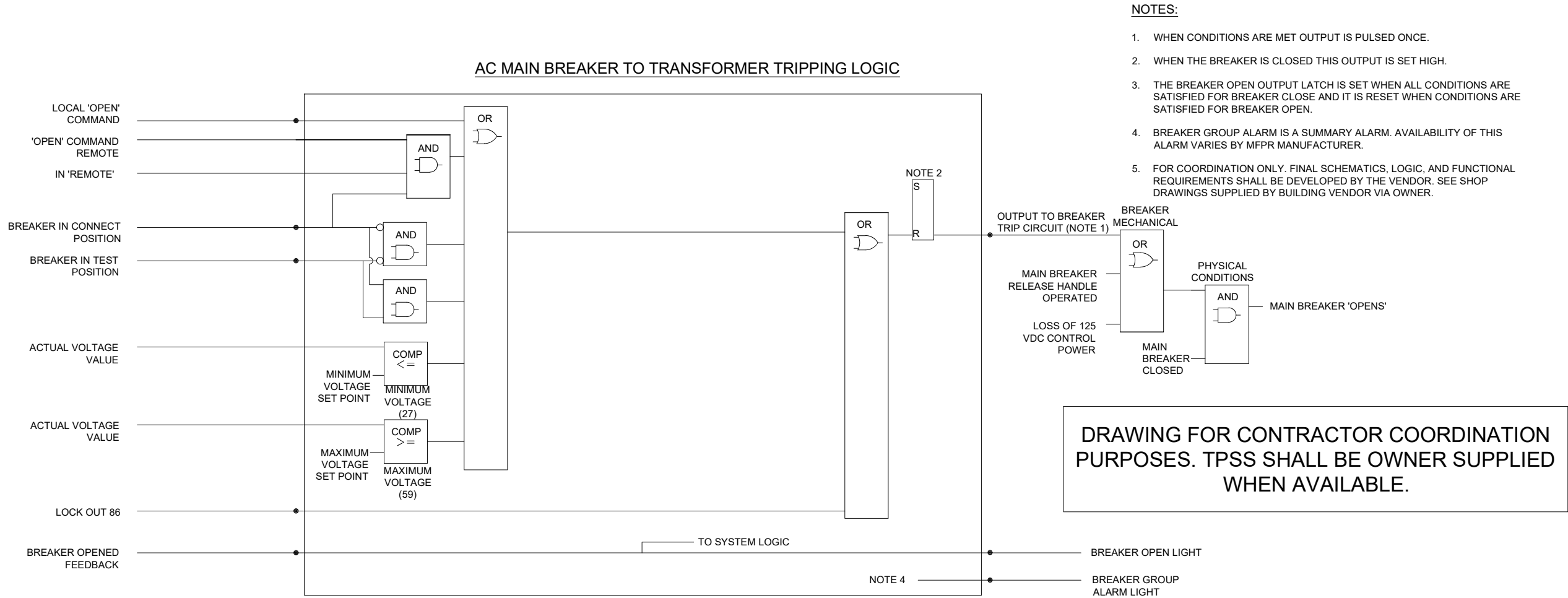
1. PLC OUTPUT ACTIVATES LOCKOUT RELAY 186 & 86X.
2. THIS SIGNAL IS ACTIVE LOW.
3. FLASHING BLUE LIGHT (NEW UNACKNOWLEDGED ALARM)
SOLID BLUE LIGHT (ACTIVE ACKNOWLEDGED ALARMS)
BLUE LIGHT OFF (NO ACTIVE ALARMS).
4. FOR COORDINATION ONLY. FINAL SCHEMATICS, LOGIC, AND FUNCTIONAL REQUIREMENTS SHALL BE DEVELOPED BY THE VENDOR. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.

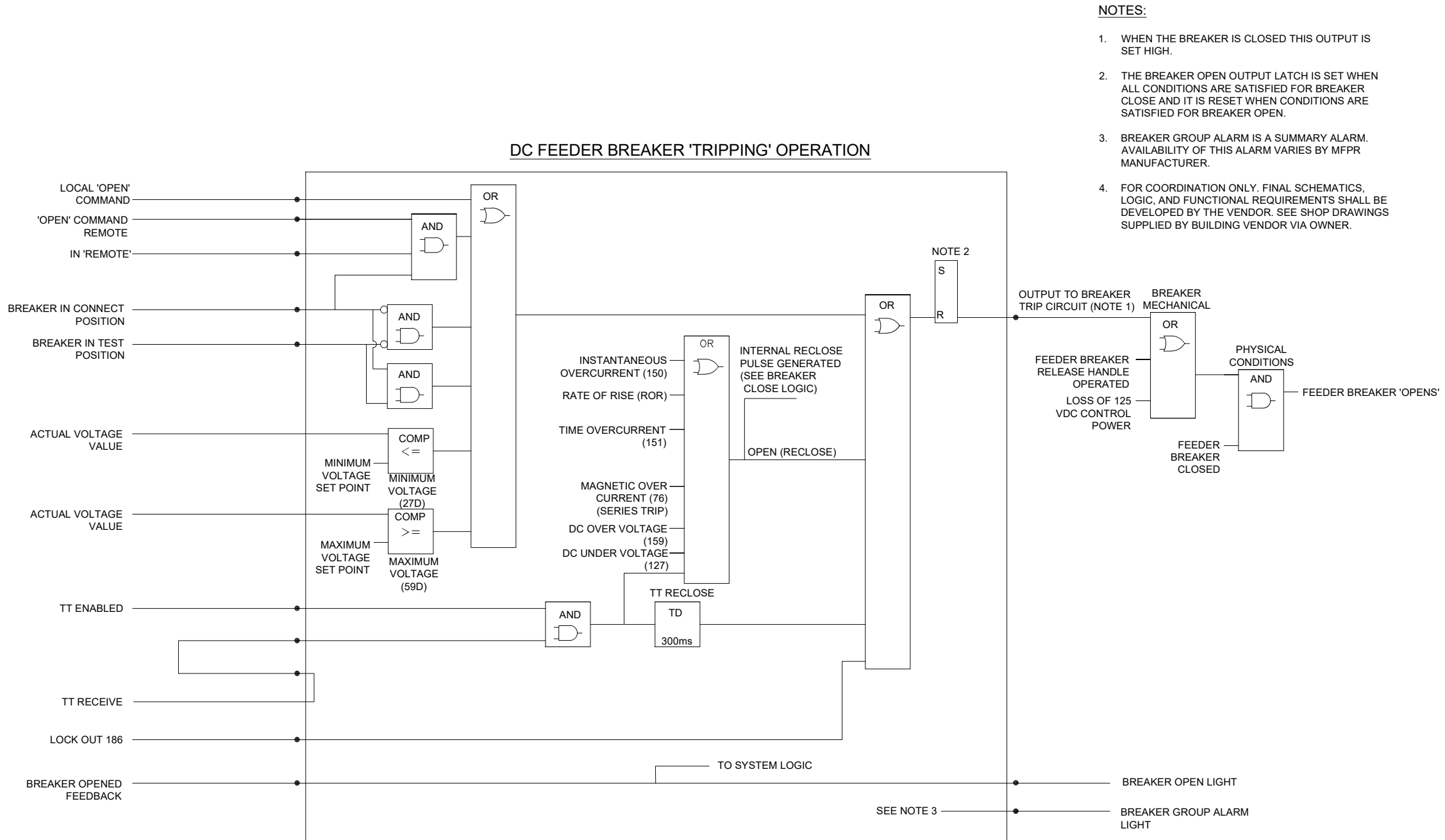
DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

LOCAL / REMOTE LOGIC



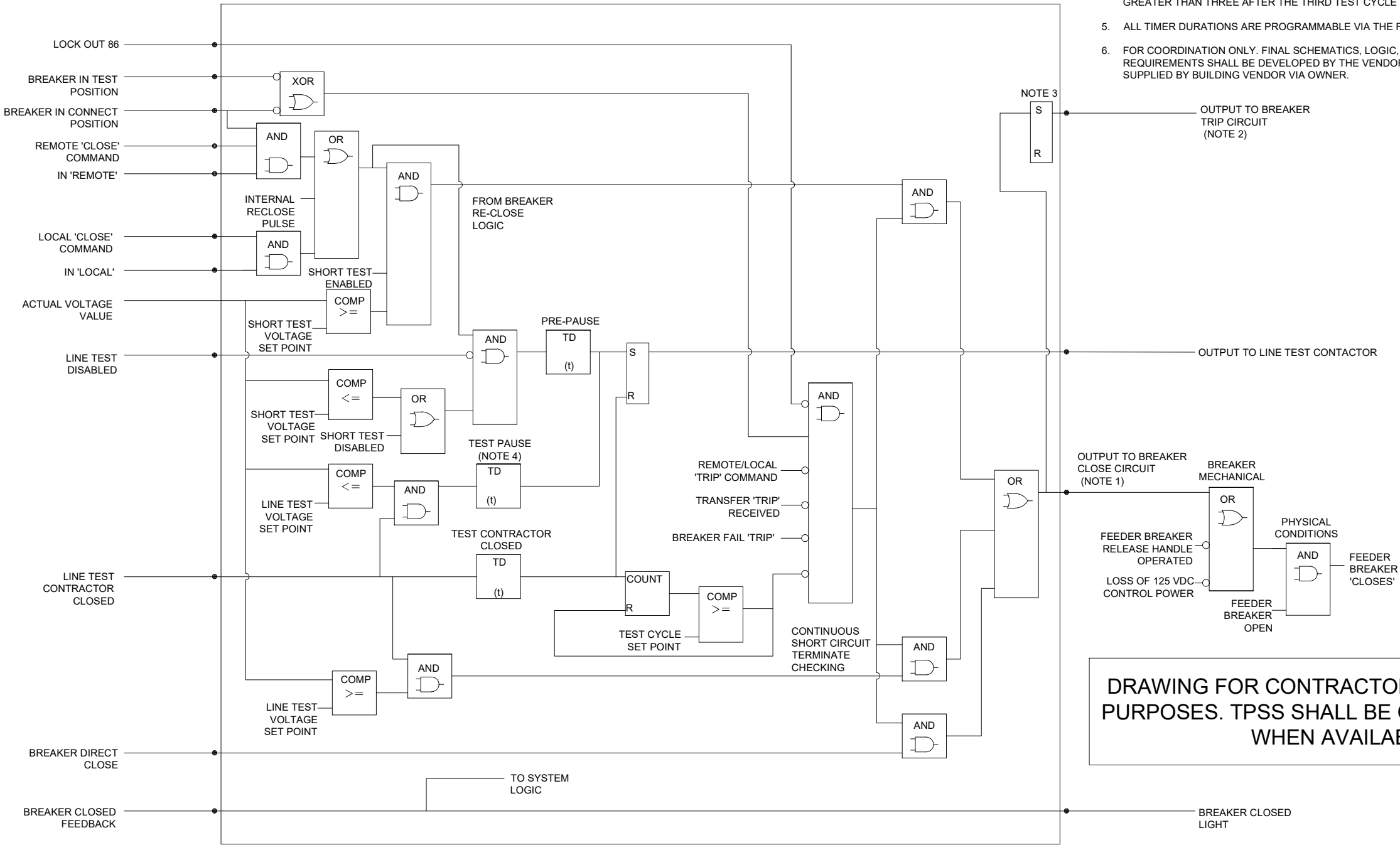
REV DATE DESCRIPTION			DESIGNED BY JDW		RideKC STREETCAR	STATE OF MISSOURI BERNARD ALLAN GREIG NUMBER PE-2021042286 PROFESSIONAL ENGINEER 12/22/2022	ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY PGL				HDR HDR Engineering, Inc.		HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS		FILENAME: J649.DWG		CONTRACT NO.: CONTRACT NO. ###	
			DRAWN BY WAC				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270		VOLUME: 1		DRAWING NO.: J649	
			CHECKED BY PGL				NOT FOR CONSTRUCTION						SHEET NO.: 150	
			APPROVED BY NKS											
PLOT DATE: 12/21/2022 5:14:24 PM			DATE 12/23/2022											





DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

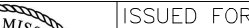
DC FEEDER BREAKER 'CLOSING' OPERATION



NOTES:

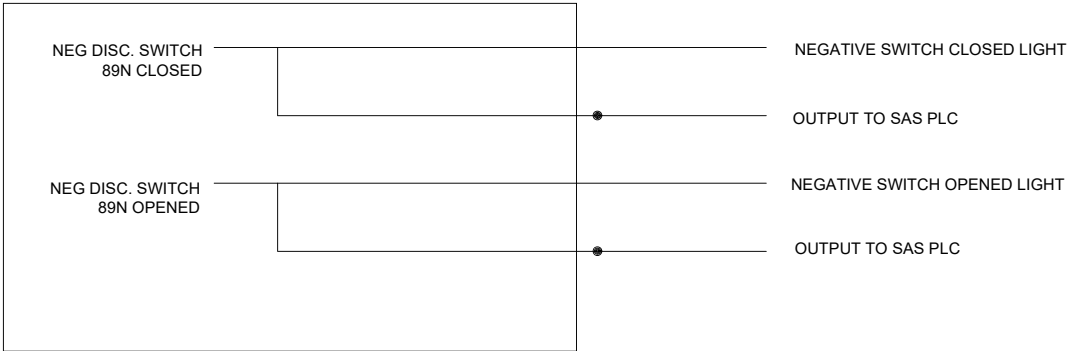
- 1. WHEN CONDITIONS ARE MET OUTPUT IS PULSED ONCE.
- 2. WHEN THE BREAKER IS CLOSED THIS OUTPUT IS SET HIGH.
- 3. THE BREAKER OPEN OUTPUT LATCH IS SET WHEN ALL CONDITIONS ARE SATISFIED FOR BREAKER CLOSE AND IT IS RESET WHEN CONDITIONS ARE SATISFIED FOR BREAKER OPEN.
- 4. THERE ARE 3 TEST PAUSE TIMERS. THE TIME USED DEPENDS ON THE CURRENT TEST CYCLE COUNT. IN THE EVENT THAT THE NUMBER OF TEST CYCLES IS SET GREATER THAN THREE AFTER THE THIRD TEST CYCLE THE SAME TIME IS USED.
- 5. ALL TIMER DURATIONS ARE PROGRAMMABLE VIA THE FRONT DISPLAY.
- 6. FOR COORDINATION ONLY. FINAL SCHEMATICS, LOGIC, AND FUNCTIONAL REQUIREMENTS SHALL BE DEVELOPED BY THE VENDOR. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.

DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

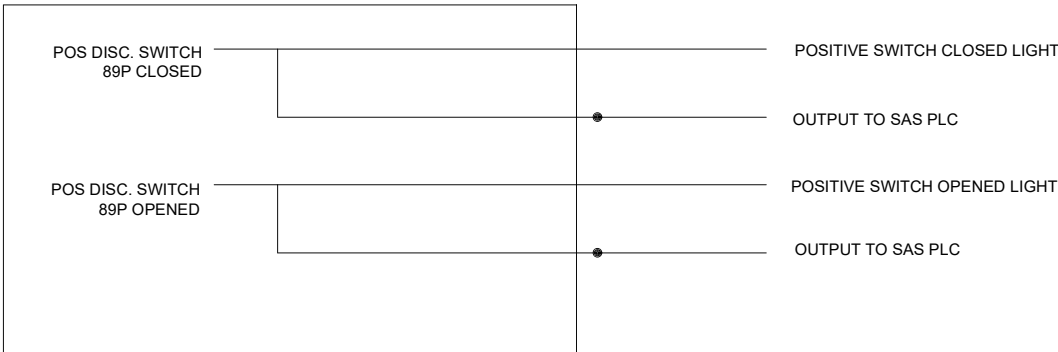
REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	PGL			 HDR Engineering, Inc.	 The HNTB COMPANIES		TRACTION POWER	FILENAME: J653.DWG
			DRAWN BY	JDW			10450 Holmes Road	INFRASTRUCTURE SOLUTIONS		TYPICAL DC FEEDER CUBICLE	CONTRACT NO.: CONTRACT NO. ###
			CHECKED BY	PGL			Suite 600	300 Apollo Drive		LOGIC DIAGRAM SHEET 2 OF 2	VOLUME: 1
			APPROVED BY	NKS			Kansas City, MO 64131-3471	Chelmsford, MA 01824			DRAWING NO.: SHEET NO.:
PLOT DATE: 12/21/2022			5:15:07 PM			DATE 12/23/2022	NOT FOR CONSTRUCTION			J653 153	

- NOTES:
- FOR COORDINATION ONLY. FINAL SCHEMATICS, LOGIC, AND FUNCTIONAL REQUIREMENTS SHALL BE DEVELOPED BY THE VENDOR. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.

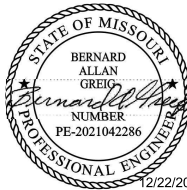
NEGATIVE DISCONNECT SWITCH LOGIC



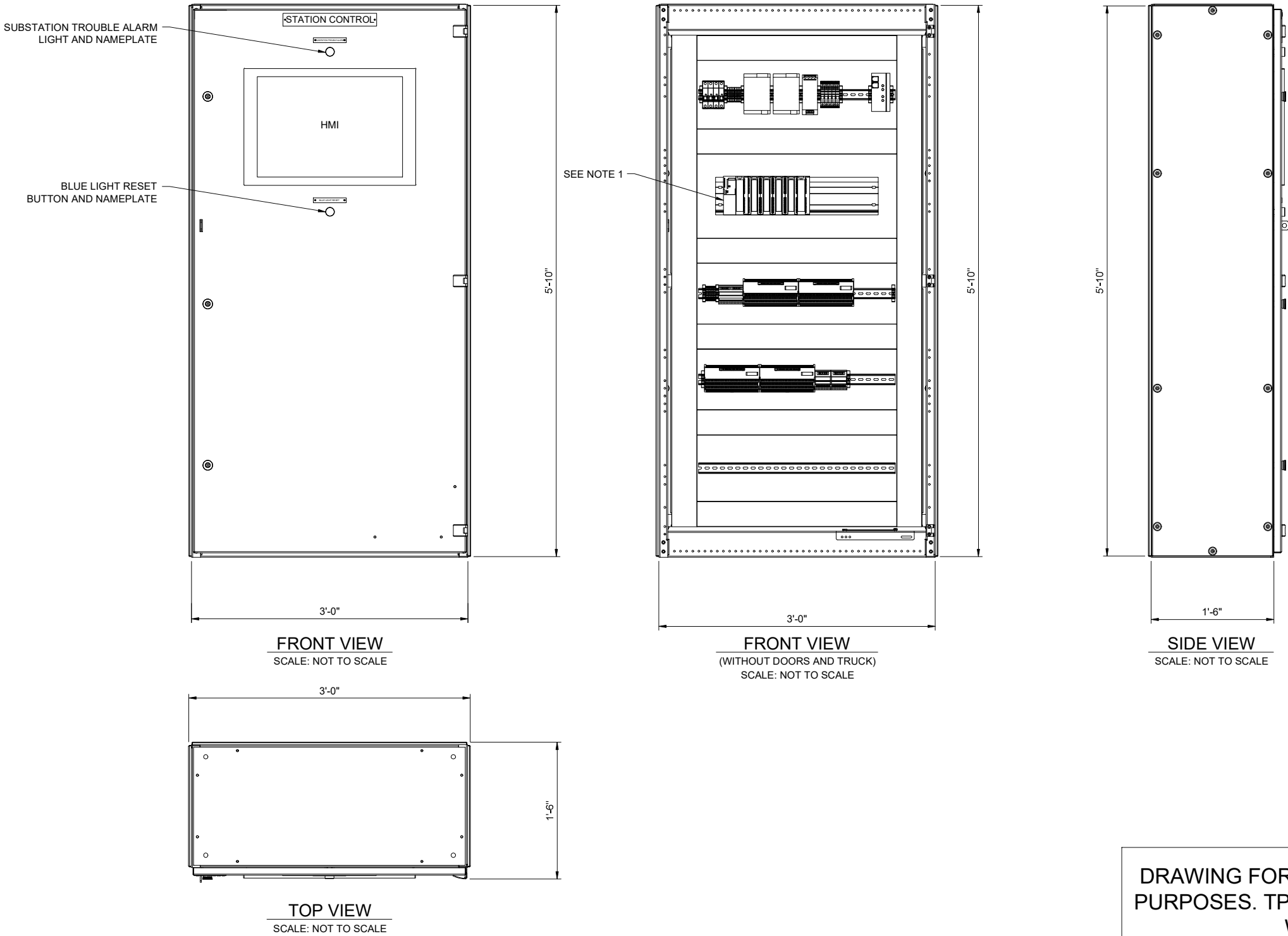
POSITIVE DISCONNECT SWITCH LOGIC



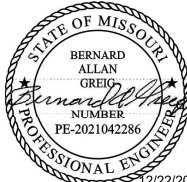
DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

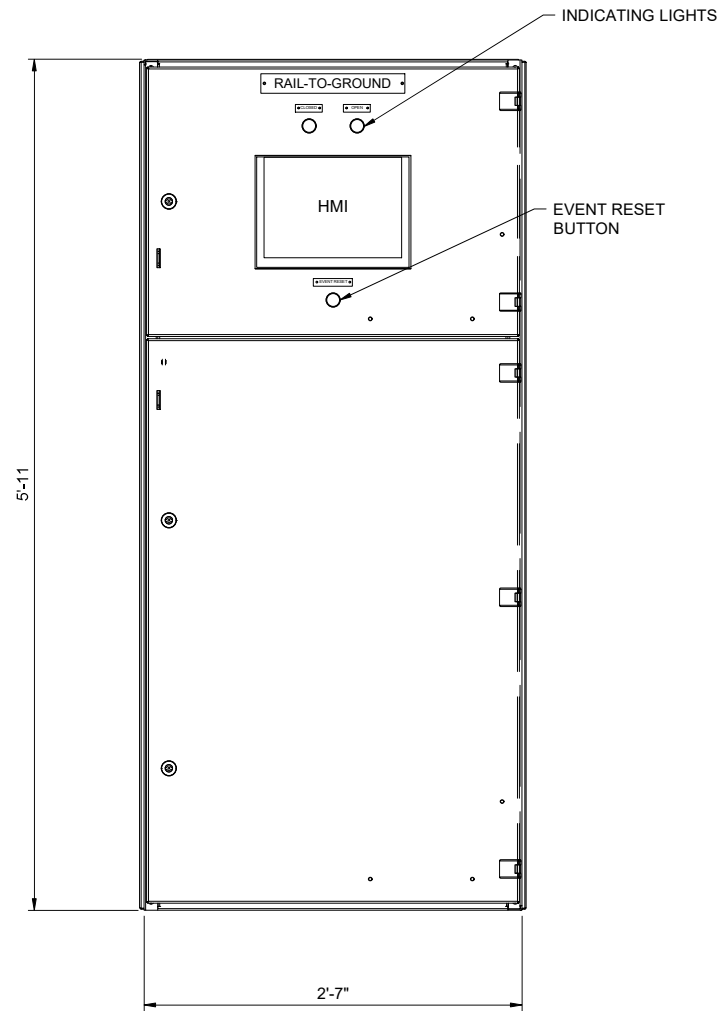
REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER NEGATIVE AND POSITIVE DISCONNECT SWITCH LOGIC DIAGRAM	SCALE FOR 22"x34": NOT TO SCALE FILENAME: J654.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: J654	SHEET NO.: 154
			CHECKED BY	PGL										
			DRAWN BY	WAC										
			CHECKED BY	PGL										
			APPROVED BY	NKS										
PLOT DATE: 12/21/2022			5:15:30 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION							

- NOTES:
- 1. FOR COORDINATION PURPOSES.
 - 2. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.

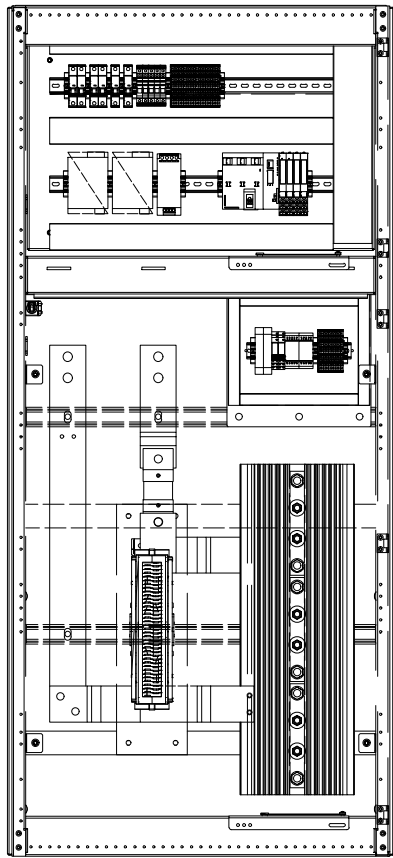


DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

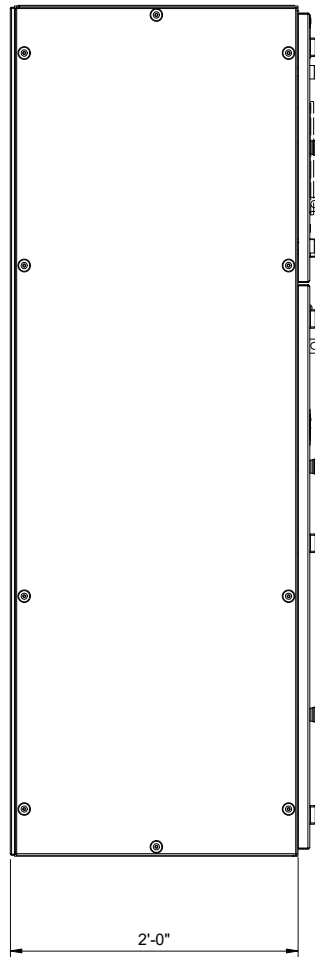
REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER STATION CONTROL CABINET TYPICAL LAYOUT	SCALE FOR 22"x34": NOT TO SCALE		
			CHECKED BY	PGL									FILENAME: J660.DWG		
			DRAWN BY	JDW									CONTRACT NO.: CONTRACT NO. ###		
			CHECKED BY	PGL									VOLUME: 1		
			APPROVED BY	NKS									DRAWING NO.: J660		
PLOT DATE: 12/21/2022			5:15:37 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION						SHEET NO.: 155		



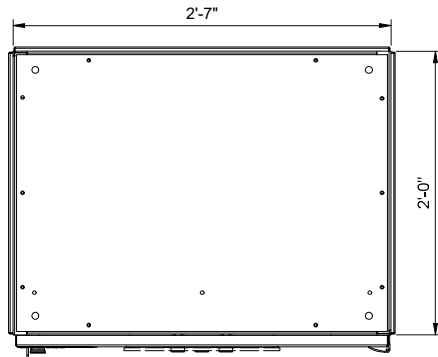
FRONT VIEW
SCALE: NOT TO SCALE



FRONT VIEW
(WITHOUT DOORS AND TRUCK)
SCALE: NOT TO SCALE



SIDE VIEW
SCALE: NOT TO SCALE

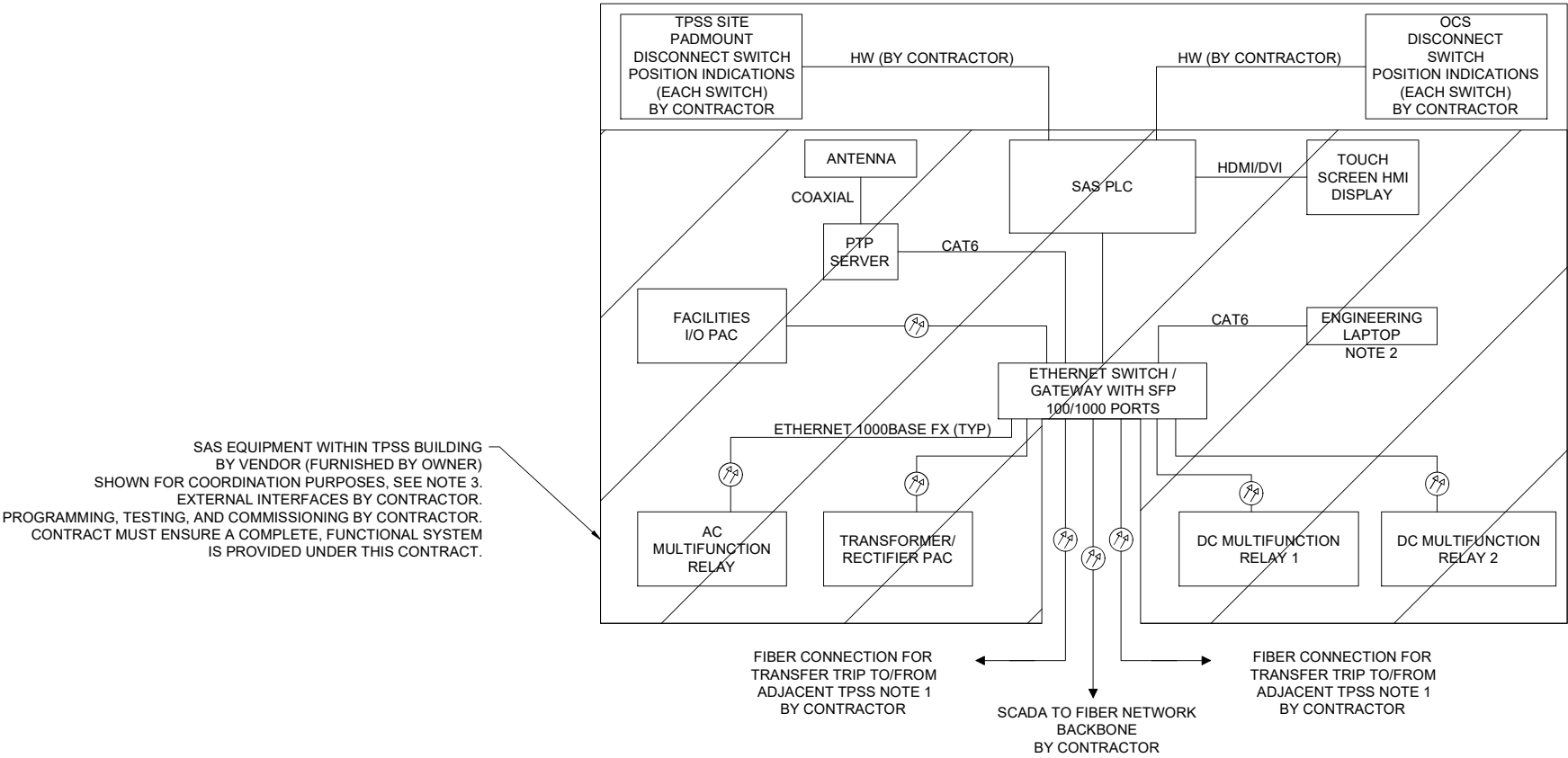


TOP VIEW
SCALE: NOT TO SCALE

- NOTES:
- 1. FOR COORDINATION PURPOSES.
 - 2. SEE SHOP DRAWINGS SUPPLIED BY BUILDING VENDOR VIA OWNER.

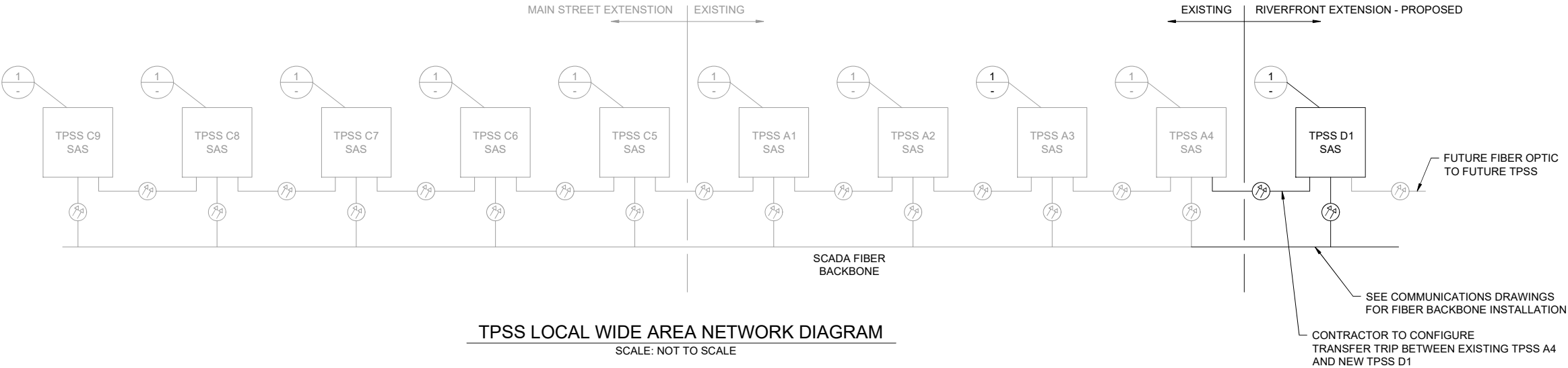
DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

REV			DATE		DESCRIPTION		DESIGNED BY		JDW				ISSUED FOR BID				DATE: 12-23-2022				KANSAS CITY STREETCAR - RIVERFRONT EXTENSION								SCALE FOR 22"x34": NOT TO SCALE							
							CHECKED BY		PGL				 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270												FILENAME:							
							DRAWN BY		JDW																				CONTRACT NO.:							
							CHECKED BY		PGL																				CONTRACT NO. ###				VOLUME:			
							APPROVED BY		NKS																				1				DRAWING NO.:			
PLOT DATE: 12/21/2022			5:15:55 PM		DATE		12/23/2022						NOT FOR CONSTRUCTION								J661				156											



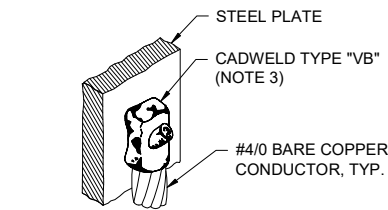
- NOTES:
- 1. CONTRACTOR SHALL CONFIGURE TRANSFER TRIP FUNCTION BETWEEN ADJACENT TPSS DC MULTIFUNCTION RELAYS USING THE COMMUNICATIONS SYSTEM FOR FIBER OPTIC CONNECTION. SEE SPECIFICATIONS FOR ADDITIONAL DETAILS.
 - 2. PROVIDE ONE ENGINEERING LAPTOP PER THE SPECIFICATIONS (BY BUILDING VENDOR).
 - 3. SHOP DRAWINGS SHALL BE PROVIDED BY THE BUILDING VENDOR VIA OWNER WHEN AVAILABLE.

TYPICAL TPSS SAS LOCAL AREA NETWORK DIAGRAM 1
SCALE: NOT TO SCALE

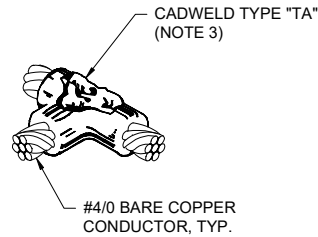


TPSS LOCAL WIDE AREA NETWORK DIAGRAM
SCALE: NOT TO SCALE

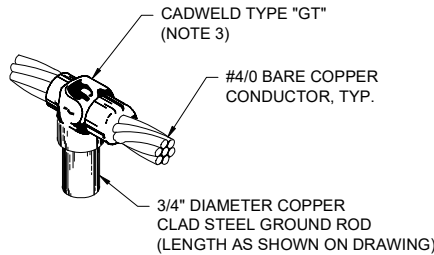
REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: J665.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1	
			CHECKED BY	PGL									
			DRAWN BY	JDW									
			CHECKED BY	PGL									
			APPROVED BY	NKS									
PLOT DATE: 12/21/2022			5:16:19 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION				DRAWING NO.: J665		SHEET NO.: 157



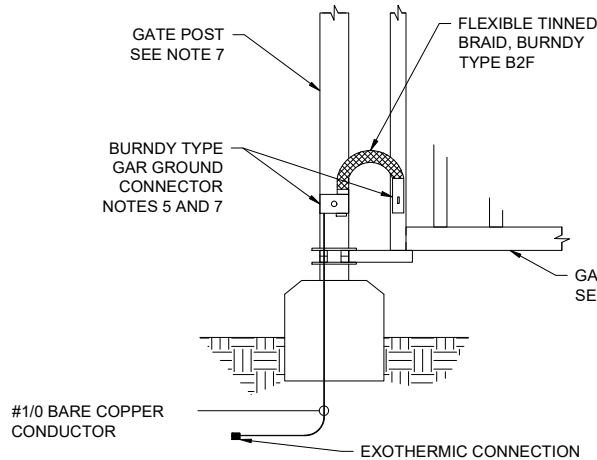
STEEL PLATE CONNECTION 1
SCALE: NOT TO SCALE



GROUND CONDUCTOR TEE CONNECTION 2
SCALE: NOT TO SCALE

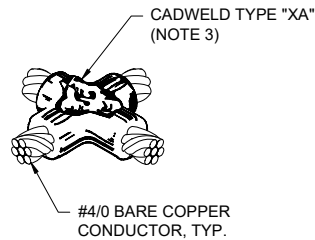


GROUND ROD CONNECTION 3
SCALE: NOT TO SCALE

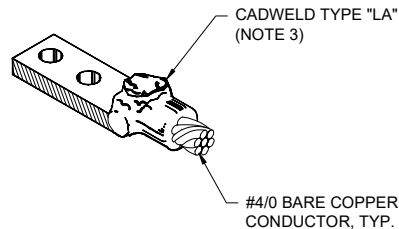


GATE GROUNDING CONNECTION 11
SCALE: NOT TO SCALE

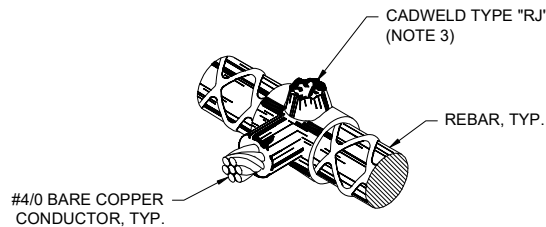
- NOTES:
- GROUND CONDUCTOR "TEE" CONNECTIONS SHALL BE USED AT ALL GROUND GRID INTERSECTIONS AROUND THE PERIMETER OF THE GROUND GRID.
 - GROUND CONDUCTOR "CROSS" CONNECTIONS SHALL BE USED AT ALL GROUND GRID INTERSECTIONS WITHIN THE PERIMETER OF THE GROUND GRID.
 - CADWELD TYPE CONNECTIONS LISTED FOR REFERENCE ONLY AND DOES NOT PRECLUDE ANY OTHER MANUFACTURER.
 - DRILL AND TAP FOR 2-HOLE NEMA LUGS.
 - COMPRESSION TYPE GROUND CONNECTIONS ARE ACCEPTABLE WHERE NOT IN CONTACT WITH GROUND/EARTH. BURNDY OR APPROVED EQUAL.
 - PRE-DRILL COPPER BUSBAR FOR NEMA 2 HOLE LUGS.
 - FOR VINYL COATED FENCING, REMOVE COATING AND CLEAN SURFACE PRIOR TO MAKING GROUNDING CONNECTIONS. AFTER MAKING CONNECTIONS, COAT EXPOSED FENCE POST SURFACE AND CONNECTIONS WITH A ZINC RICH PAINT.



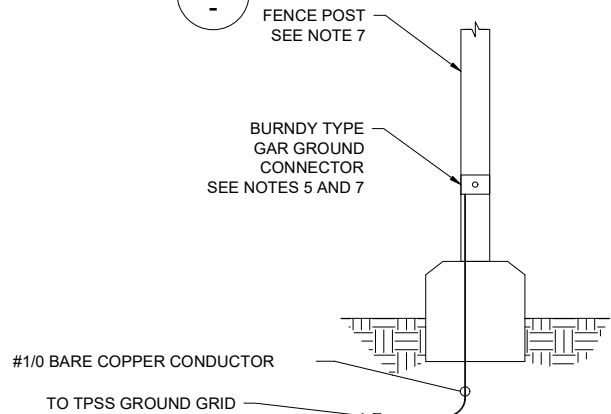
GROUND CONDUCTOR CROSS CONNECTION 4
SCALE: NOT TO SCALE



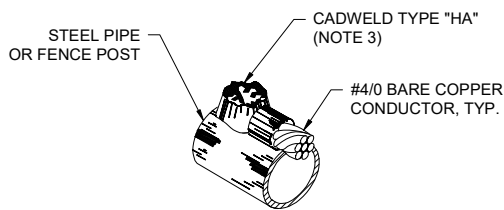
GROUND CONDUCTOR TO 2-HOLE TERMINAL CONNECTION 5
SCALE: NOT TO SCALE



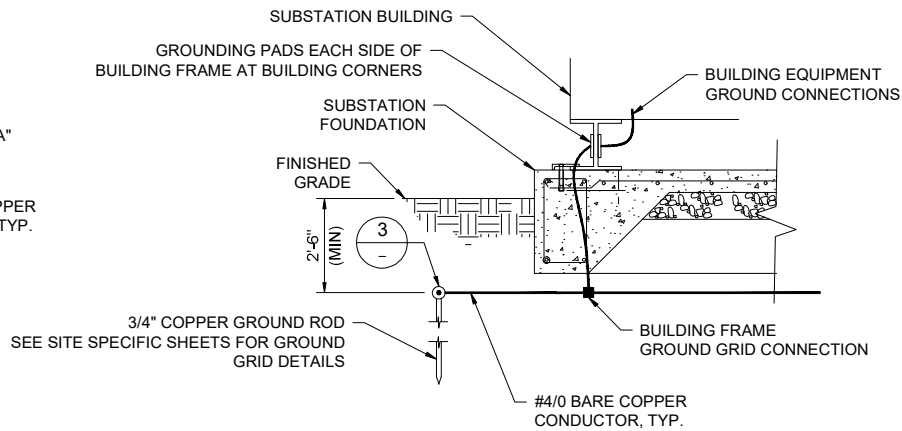
GROUND CONDUCTOR TO REBAR CONNECTION 6
SCALE: NOT TO SCALE



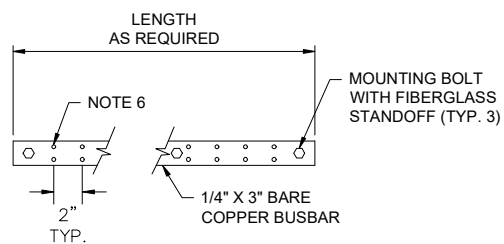
FENCE POST GROUNDING CONNECTION 12
SCALE: NOT TO SCALE



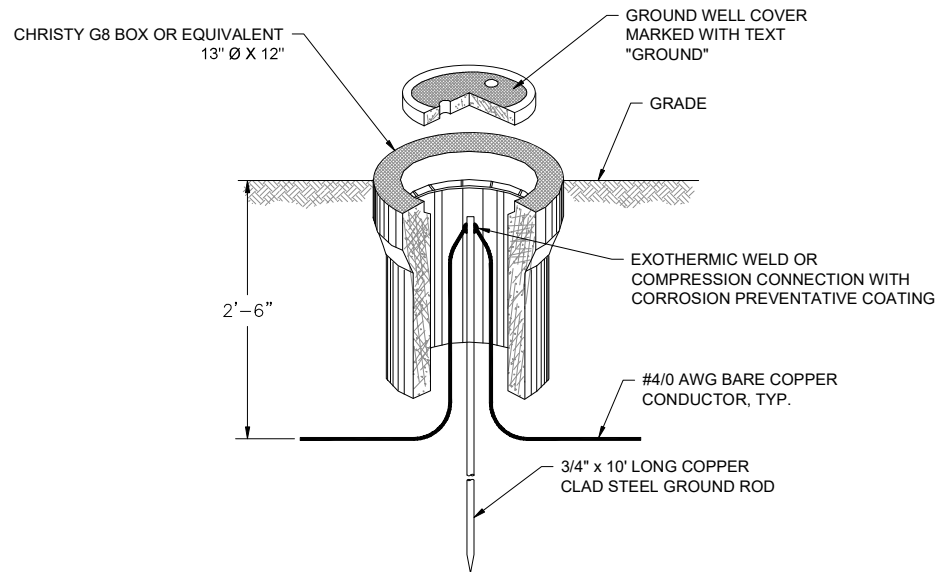
GROUND CONDUCTOR TP STEEL PIPE CONNECTION 7
SCALE: NOT TO SCALE



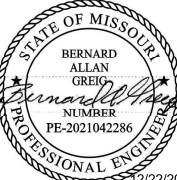
GROUNDING MAT DETAIL 8
SCALE: NOT TO SCALE



TYPICAL GROUND BUSBAR 9
SCALE: NOT TO SCALE



GROUND WELL DETAIL 10
SCALE: NOT TO SCALE

REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER TYPICAL GROUNDING DETAILS	SCALE FOR 22"x34": NOT TO SCALE FILENAME: J673.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1	
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			DRAWN BY	JDW			J673	158						
			CHECKED BY	PGL										
			APPROVED BY	NKS										
PLOT DATE: 12/21/2022			5:16:53 PM		DATE	12/23/2022								

NOTES:
1. SEE SHEET J630 FOR TPSS D1 SITE RACEWAY LAYOUT.

TPSS D1 - CONDUCTOR SCHEDULE											
FEEDER NUMBER	FROM	TO	VIA DUCTBANK/CONDUIT	DUCTBANK SECTION	CABLE DESCRIPTION					DRAWING NUMBER	COMMENTS
					QUANTITY	SIZE	TYPE	VOLTAGE RATING	TEMPERATURE RATING		
D1-PF1	D1-F1	D1-DS1	TPD-D1P1	2A / C404	2	250 KCMIL	EPR	2000 V	90° C	J630	POSITIVE FEEDER
	D1-DS1	TE-MH-D101	TPD-D1P5	2A / C404 10A / C404	2	250 KCMIL	EPR	2000 V	90° C	J630	
	TE-MH-D101	OCS FEEDER POLE R/34 (SB)			2	250 KCMIL	EPR	2000 V	90° C		SEE SYSTEMWIDE ELECTRICAL PLAN
D1-PF2	D1-F1	D1-DS2	TPD-D1P2	2A / C404	2	250 KCMIL	EPR	2000 V	90° C	J630	POSITIVE FEEDER
	D1-DS2	TE-MH-D101	TPD-D1P6	2A / C404 10A / C404	2	250 KCMIL	EPR	2000 V	90° C	J630	
	TE-MH-D101	OCS FEEDER POLE R/33 (NB)			2	250 KCMIL	EPR	2000 V	90° C		SEE SYSTEMWIDE ELECTRICAL PLAN
D1-PF3	D1-F2	D1-DS3	TPD-D1P3	2A / C404	2	250 KCMIL	EPR	2000 V	90° C	J630	POSITIVE FEEDER
	D1-DS3	TE-MH-D101	TPD-D1P7	2A / C404 10A / C404	2	250 KCMIL	EPR	2000 V	90° C	J630	
	TE-MH-D101	OCS FEEDER POLE R/34 (SB)			2	250 KCMIL	EPR	2000 V	90° C		SEE SYSTEMWIDE ELECTRICAL PLAN
D1-PF4	D1-F2	D1-DS4	TPD-D1P4	2A / C404	2	250 KCMIL	EPR	2000 V	90° C	J630	POSITIVE FEEDER
	D1-DS4	TE-MH-D101	TPD-D1P8	2A / C404 10A / C404	2	250 KCMIL	EPR	2000 V	90° C	J630	
	TE-MH-D101	OCS FEEDER POLE R/33 (NB)			2	250 KCMIL	EPR	2000 V	90° C		SEE SYSTEMWIDE ELECTRICAL PLAN
D1-NR1	DC NEGATIVE BUS	TE-MH-D102	TPD-D1N1	4A / C404	4	250 KCMIL	EPR	2000 V	90° C	J630	NEGATIVE RETURN
	TE-MH-D102	TRACK BLOCKOUT (SB)			4	250 KCMIL	EPR	2000 V	90° C		SEE SYSTEMWIDE ELECTRICAL PLAN
D1-NR2	DC NEGATIVE BUS	TE-MH-D102	TPD-D1N1	4A / C404	4	250 KCMIL	EPR	2000 V	90° C	J630	NEGATIVE RETURN
	TE-MH-D102	TRACK BLOCKOUT (NB)			4	250 KCMIL	EPR	2000 V	90° C		SEE SYSTEMWIDE ELECTRICAL PLAN
D1-HV1	FUSED LOAD BREAK FUSED /METERING CABINET	LOCAL UTILITY SECTIONALIZER SWITCHGEAR	TPD-D1U1	2A / C404	BY LOCAL UTILITY	BY LOCAL UTILITY	BY LOCAL UTILITY	BY LOCAL UTILITY	BY LOCAL UTILITY	J630	COORDINATE CABLE AND DUCTBANK REQUIREMENTS WITH LOCAL UTILITY
D1-HV2	LOCAL UTILITY SECTIONALIZER SWITCHGEAR	LOCAL UTILITY MANHOLE / SPLICE	TPD-D1U2	2A / C404	BY LOCAL UTILITY	BY LOCAL UTILITY	BY LOCAL UTILITY	BY LOCAL UTILITY	BY LOCAL UTILITY	J630	COORDINATE CABLE AND DUCTBANK REQUIREMENTS WITH LOCAL UTILITY
D1-SS1	HMI PAC I/O MODULE	D1-DS1, D1-DS2, D1-DS3, D1-DS4, D1-DS5, D1-DS6 OPEN/CLOSE AUX CONTACTS	TPD-D1S1	2B / C404	2	12/C - #12 AWG	XLPE	600 V	90° C	J630	SWITCH STATUS INDICATIONS
FIBER	COMMUNICATIONS RACK	FIBER BACKBONE SEE COMMUNICATIONS PLANS	TPD-D1C1	2B / C404 4C / C404	SEE COMMUNICATIONS PLANS	SEE COMMUNICATIONS PLANS	SEE COMMUNICATIONS PLANS	SEE COMMUNICATIONS PLANS	SEE COMMUNICATIONS PLANS	SEE COMMUNICATIONS PLANS	SEE COMMUNICATIONS PLANS

REV	DATE	DESCRIPTION

DESIGNED BY
JDW

CHECKED BY
PGL

DRAWN BY
JDW

CHECKED BY
PGL

APPROVED BY
NKS

ISSUED FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACTION POWER
D1 CONDUCTOR SCHEDULE

SCALE FOR 22"x34":
NOT TO SCALE

FILENAME:
J680.DWG

CONTRACT NO.:
CONTRACT NO. ###

VOLUME:
1

DRAWING NO.:
J680

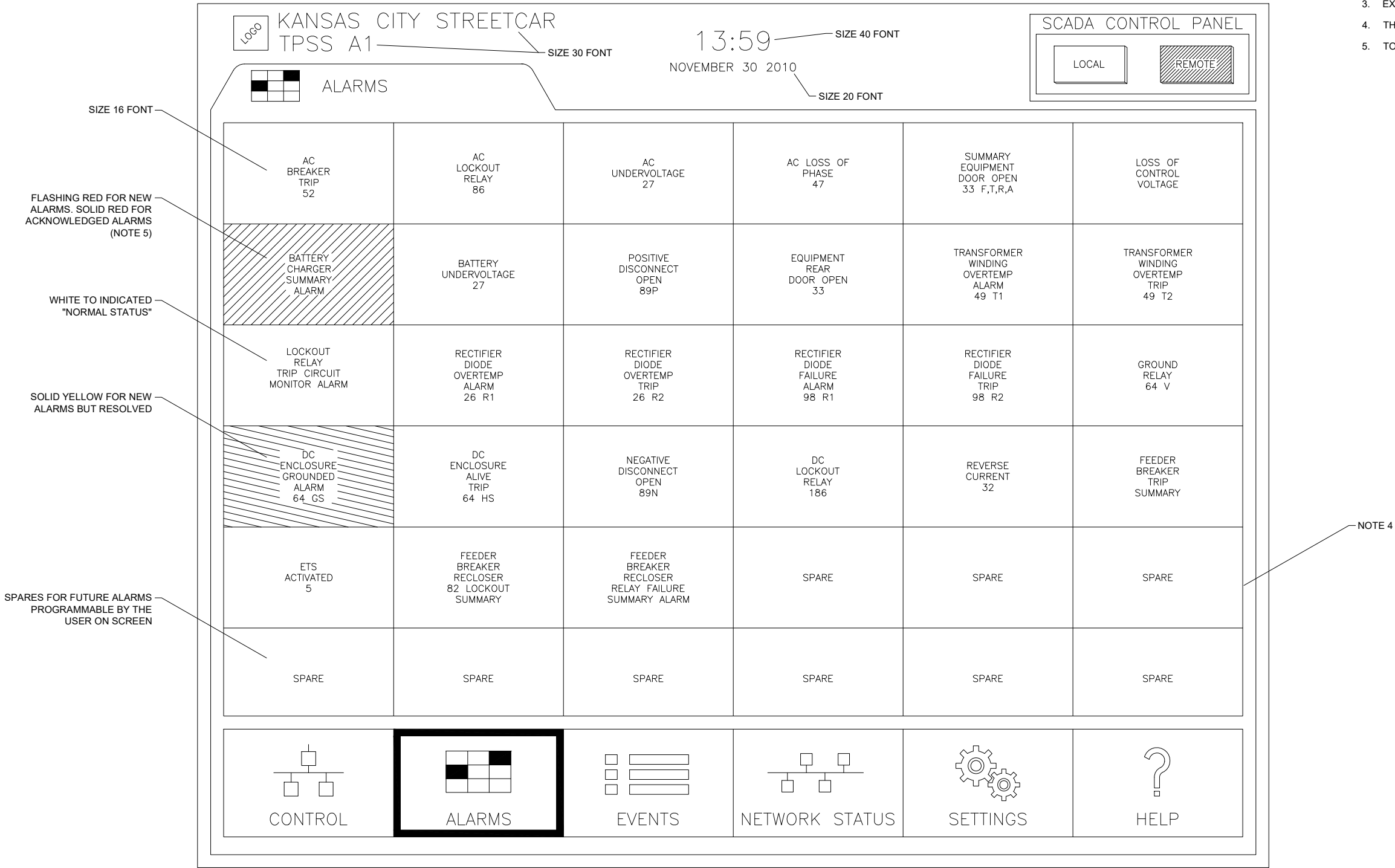
SHEET NO.:
159

PLOT DATE: 12/21/2022

5:17:02 PM

DATE 12/23/2022

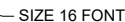
- NOTES:
- 1. NOT USED.
 - 2. HEADER INFORMATION SHALL BE VIEWABLE AT ALL TIMES.
 - 3. EXTEND GUI TO FULL DIMENSIONS OF HMI SCREEN.
 - 4. THERE SHALL BE A MINIMUM OF 36 WINDOWS.
 - 5. TOUCH WINDOW TO ACKNOWLEDGE ALARMS.



DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

REV DATE DESCRIPTION			DESIGNED BY JDW		RideKC STREETCAR	STATE OF MISSOURI BERNARD ALLAN GREIG <i>Bernard Allan Greig</i> NUMBER PE-2021042286 PROFESSIONAL ENGINEER 12/22/2022	ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": NOT TO SCALE			
			CHECKED BY PGL				HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270		TRACTION POWER TYPICAL TPSS HMI ALARM SCREEN LAYOUT				FILENAME: J690-J693.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1	
			DRAWN BY JDW								SHEET NO.: 160					
			CHECKED BY PGL													
			APPROVED BY NKS													
PLOT DATE: 12/21/2022 5:17:37 PM			DATE 12/23/2022				NOT FOR CONSTRUCTION									

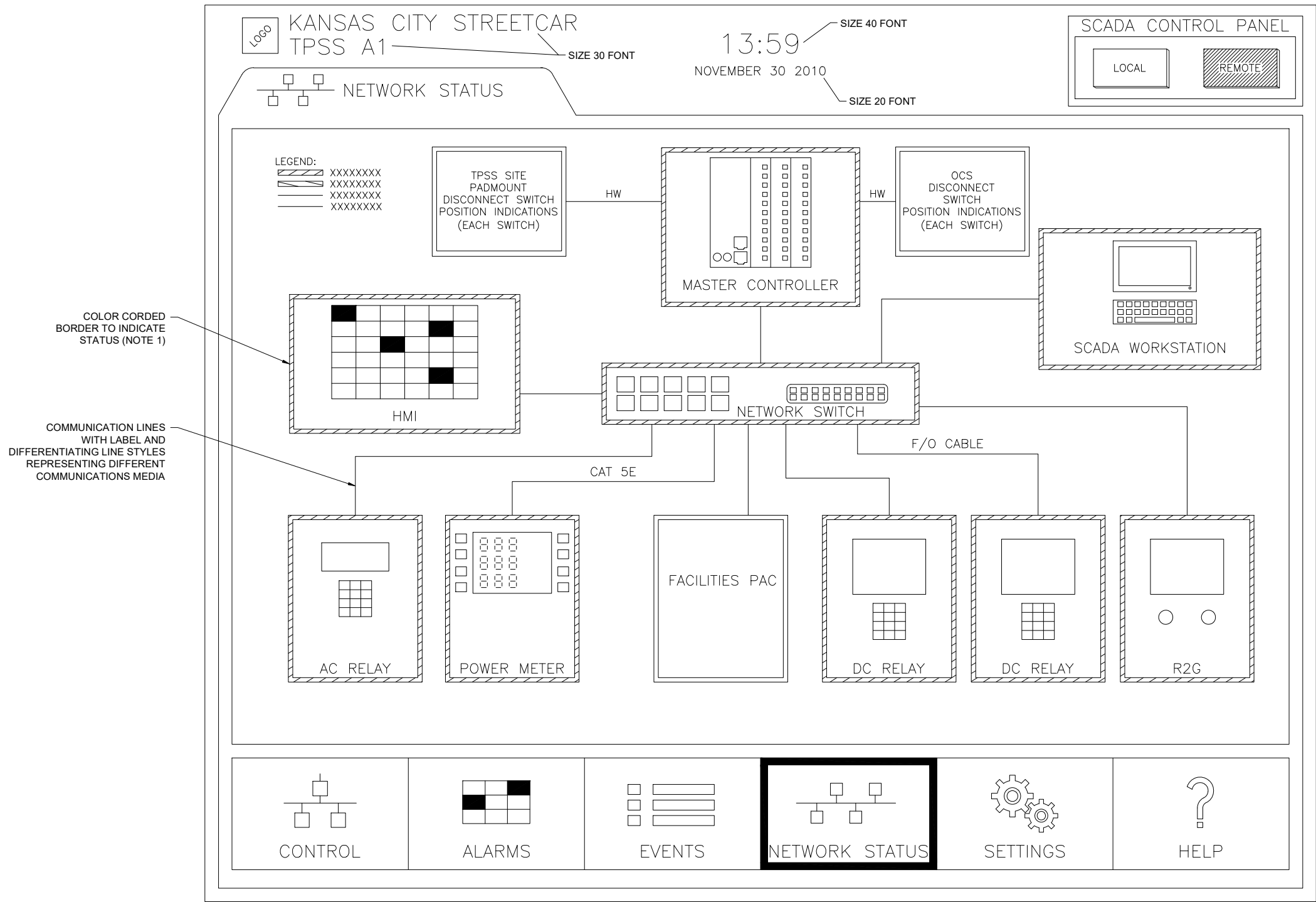
1. NOT USED.
2. HEADER INFORMATION SHALL BE VIEWABLE AT ALL TIMES.
3. EXTEND GUI TO FULL DIMENSIONS OF HMI SCREEN.



DRAWING FOR CONTRACTOR COORDINATION
PURPOSES. TPSS SHALL BE OWNER SUPPLIED
WHEN AVAILABLE.

302994

- NOTES:
- 1. NOT USED.
 - 2. HEADER INFORMATION SHALL BE VIEWABLE AT ALL TIMES.
 - 3. EXTEND GUI TO FULL DIMENSIONS OF HMI SCREEN.



DRAWING FOR CONTRACTOR COORDINATION PURPOSES. TPSS SHALL BE OWNER SUPPLIED WHEN AVAILABLE.

REV	DATE	DESCRIPTION	DESIGNED BY	JDW			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRACTION POWER TYPICAL TPSS HMI NETWORK STATUS SCREEN LAYOUT	SCALE FOR 22"x34": NOT TO SCALE FILENAME: J690-J693.DWG CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: J693	SHEET NO.: 163
			CHECKED BY	PGL										
			DRAWN BY	JDW										
			CHECKED BY	PGL										
			APPROVED BY	NKS										
PLOT DATE: 12/21/2022			5:17:37 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION							

CIP CONCRETE NOTES:

1. REFER TO THE PROJECT SPECIFICATIONS FOR CONCRETE WORK SHOWN ON THIS SHEET.
2. MINIMUM 28 DAY CAST-IN-PLACE CONCRETE COMPRESSIVE STRENGTH SHALL BE 3,000 PSI, WITH 3/4" MAXIMUM AGGREGATE SIZE.
3. THE FOLLOWING MINIMUM COVER SHALL BE PROVIDED FOR REINFORCING BARS UNLESS SHOWN OTHERWISE ON THE DRAWINGS:

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"

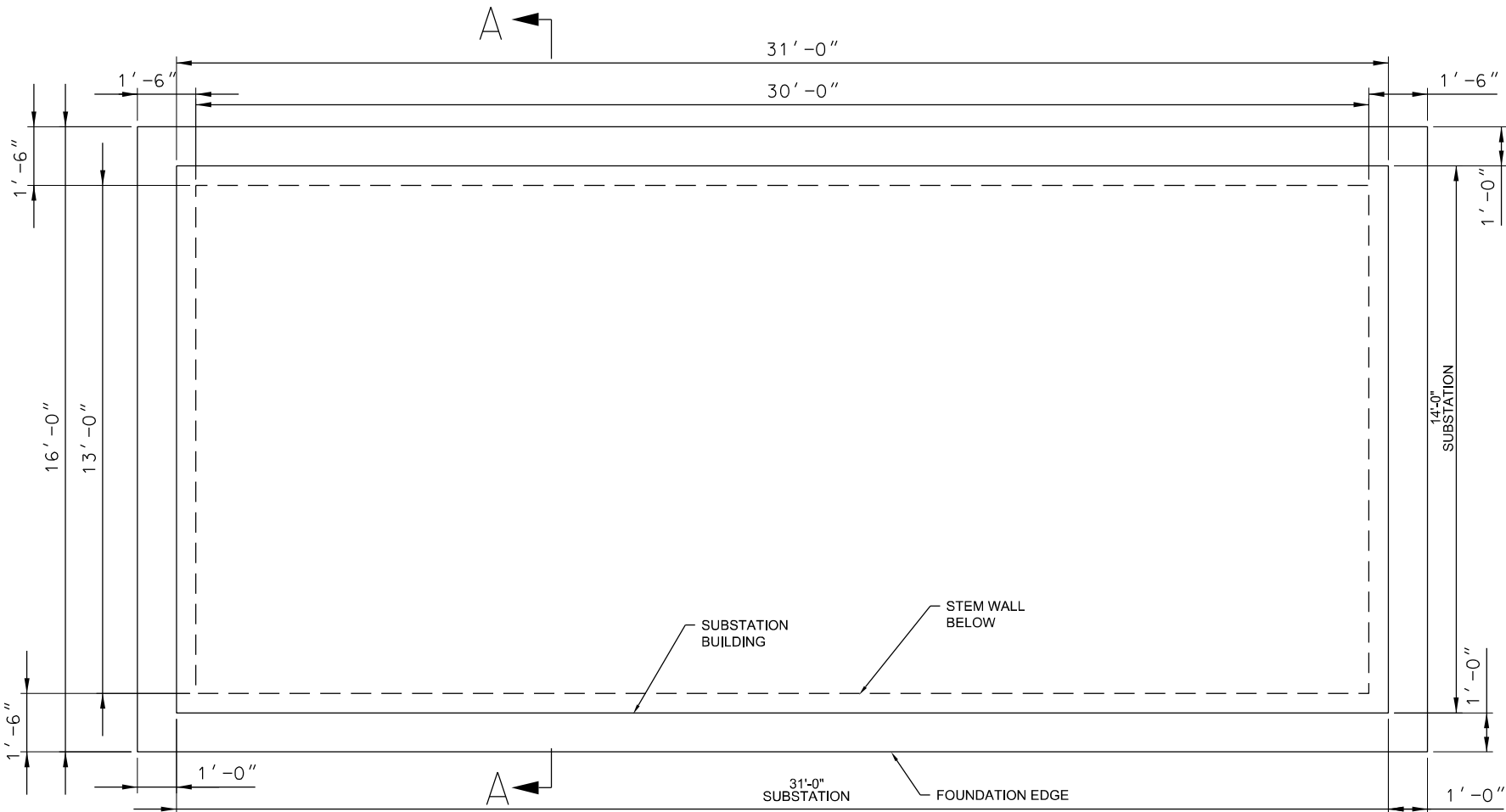
CONCRETE EXPOSED TO EARTH OR WEATHER: 2"
4. PROVIDE 3/4" CHAMFERED EDGE AT ALL EXPOSED CONCRETE CORNERS AND JOINTS. NOT ALL CHAMFERS MAY BE SHOWN ON THE DRAWING.
5. CONCRETE SHALL BE CAST MONOLITHIC UNLESS SPECIFICALLY NOTED OTHERWISE.
6. COORDINATE FINAL DIMENSIONS OF THE FOUNDATION SLAB AND LOCATION OF CONDUIT STUB-UPS AND GROUNDING PIGTAILS WITH SUBSTATION PROCUREMENT CONTRACTOR.
7. CONFIRM ALL SKID DIMENSIONS WITH ENGINEER PRIOR TO CONSTRUCTION OF CONCRETE SLAB.
8. TOP OF SLAB SHALL BE SLOPED 1/8" FROM CENTER OF SLAB TO EACH CORNER TO PREVENT STANDING WATER. REFER TO CIVIL PLANS FOR GRADING AND SLOPE AROUND THE TPSS FOUNDATIONS.
9. CONCRETE SHALL BE TROWELLED TO SMOOTH FINISH.
10. ANCHORS SHALL BE OF A REPUTABLE MANUFACTURER SUCH AS HILTI, SIMPSON, OR SIKA, AND BE DESIGNED BASED ON CURRENT DESIGN STANDARDS (SEE ACI 318 APPENDIX D) FOR THE INTENDED USAGE AND CONDITIONS. ALL EXPANSION AND ADHESIVE ANCHORS SHALL HAVE THE ICC REPORT SHOWING EQUIVALENT LOAD CAPACITY. SUBMIT AND INSTALL PER THE ICC EVALUATION REPORT. FOLLOW MANUFACTURER'S REQUIREMENTS FOR APPLICATION, CLEANING AND INSTALLATION. SEE PROJECT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
11. WHEN DRILLING HOLES FOR DOWELS, NO EXISTING UNREINFORCING BAR SHALL BE CUT. CONTRACTOR SHALL FILL ALL UNSUCCESSFUL HOLES WITH EPOXY PRIOR TO CASTING CONCRETE.

TPSS FOUNDATION NOTES:

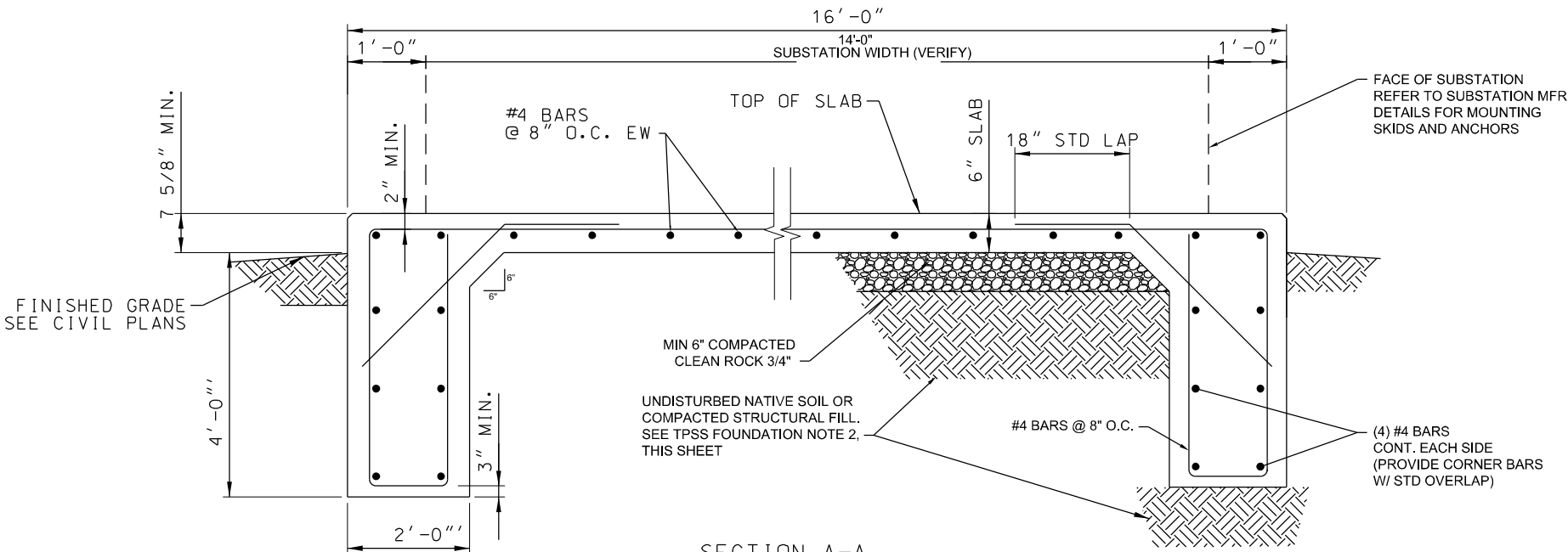
1. THE FOLLOWING DESIGN PARAMETERS ARE BASED ON THE GEOTECHNICAL REPORT KANSAS CITY RIVERFRONT STREETCAR EXTENSION PROVIDED BY TSi GEOTECHNICAL INC. DATED JULY 27, 2022:

1.1. MIN. SOIL BEARING PRESSURE 1500 PSF

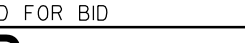
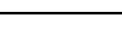
1.2. FOOTING FROST DEPTH 3'-0"
2. TPSS FOUNDATIONS SHALL BE BEARING ENTIRELY ON NEW STRUCTURAL FILL OR NATIVE SOILS THAT MEET REQUIREMENTS IN THE SPECIFICATIONS AND GEOTECHNICAL REPORT CAPABLE OF MINIMUM 1500 PSF BEARING PRESSURE.
3. IF EXISTING UNDOCUMENTED FILL IS ENCOUNTERED AT THE FOUNDATION SUBGRADE, IT SHOULD BE REMOVED AND REPLACED WITH PROPERLY COMPACTED FILL MATERIAL AS DEFINED IN PROJECT SPECIFICATIONS.
4. DUCTBANKS SHALL NOT PENETRATE THROUGH THE STEM WALL.



TPSS FOUNDATION - PLAN 1



SECTION A-A

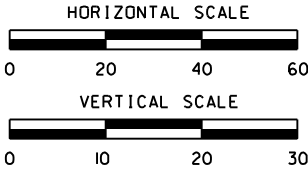
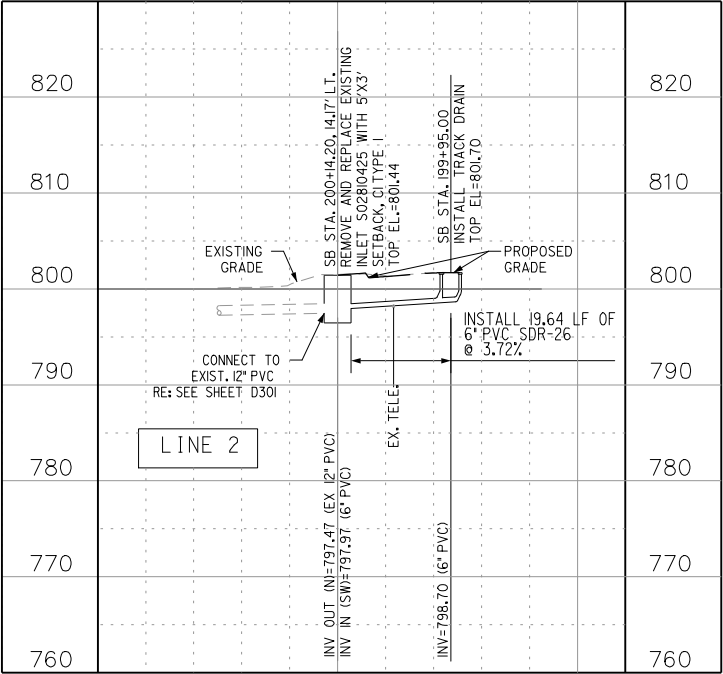
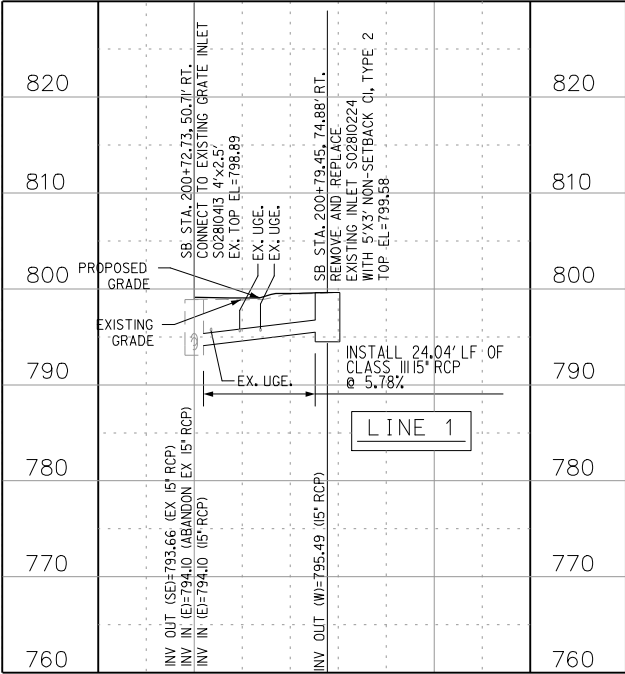
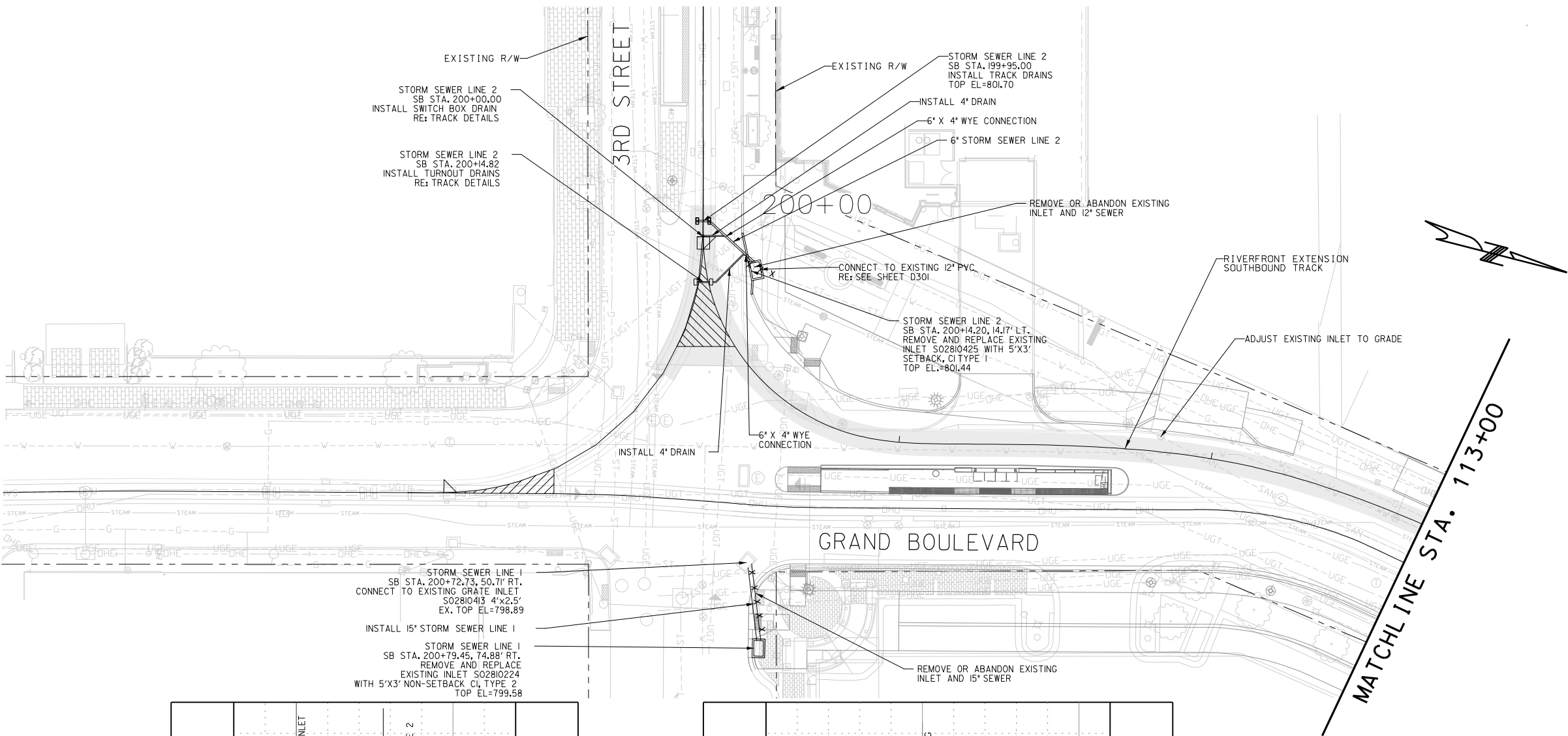
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									CHECKED BY			PY															HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856												Talliaferro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466						NOT TO SCALE				FILENAME:			
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									CHECKED BY			MM																					TRACTION POWER SYSTEM																			
									APPROVED BY			NKS															TYPICAL SUBSTATION FOUNDATION DETAIL																									
																																							DRAWING NO.:				SHEET NO.:									
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PLOT DATE:			12/23/2022						9:56:29 AM			DATE			12-23-2022																																					

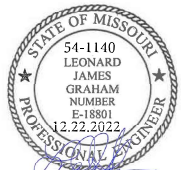


REV	DATE	DESCRIPTION	DESIGNED BY	MM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION TRACTION POWER SYSTEM TYPICAL PAD MOUNTED DISCONNECT SWITCH FOUNDATION DETAILS	SCALE FOR 22"x34":	
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			DRAWN BY	LG						J695.dgn	
			CHECKED BY	MM						CONTRACT NO.:	
			APPROVED BY	NKS						CONTRACT NO. ***	
PLOT DATE: 12/23/2022			9:56:31 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION		VOLUME:		
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GENERAL NOTES

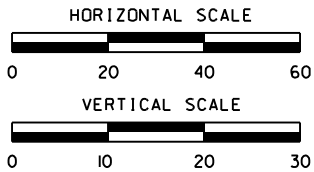
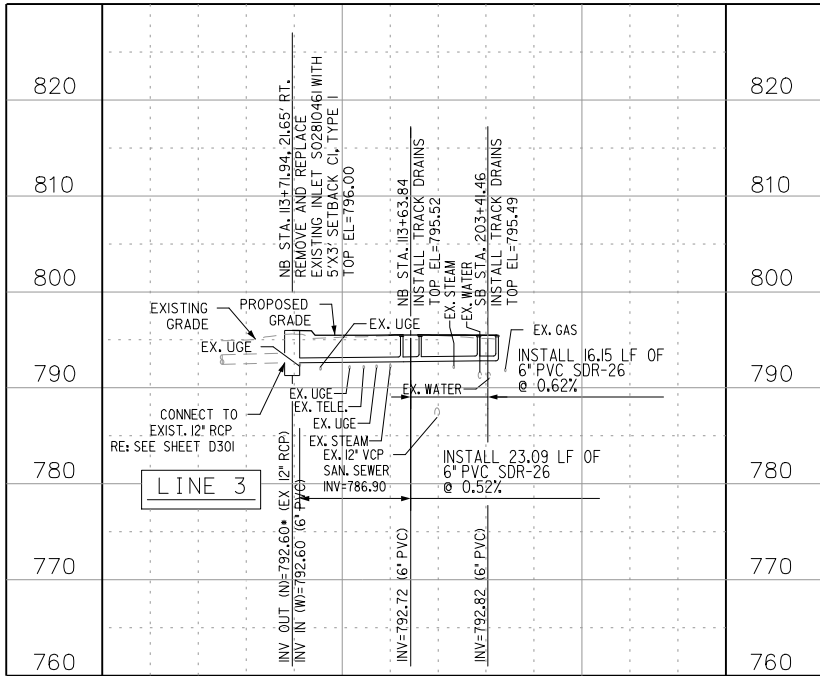
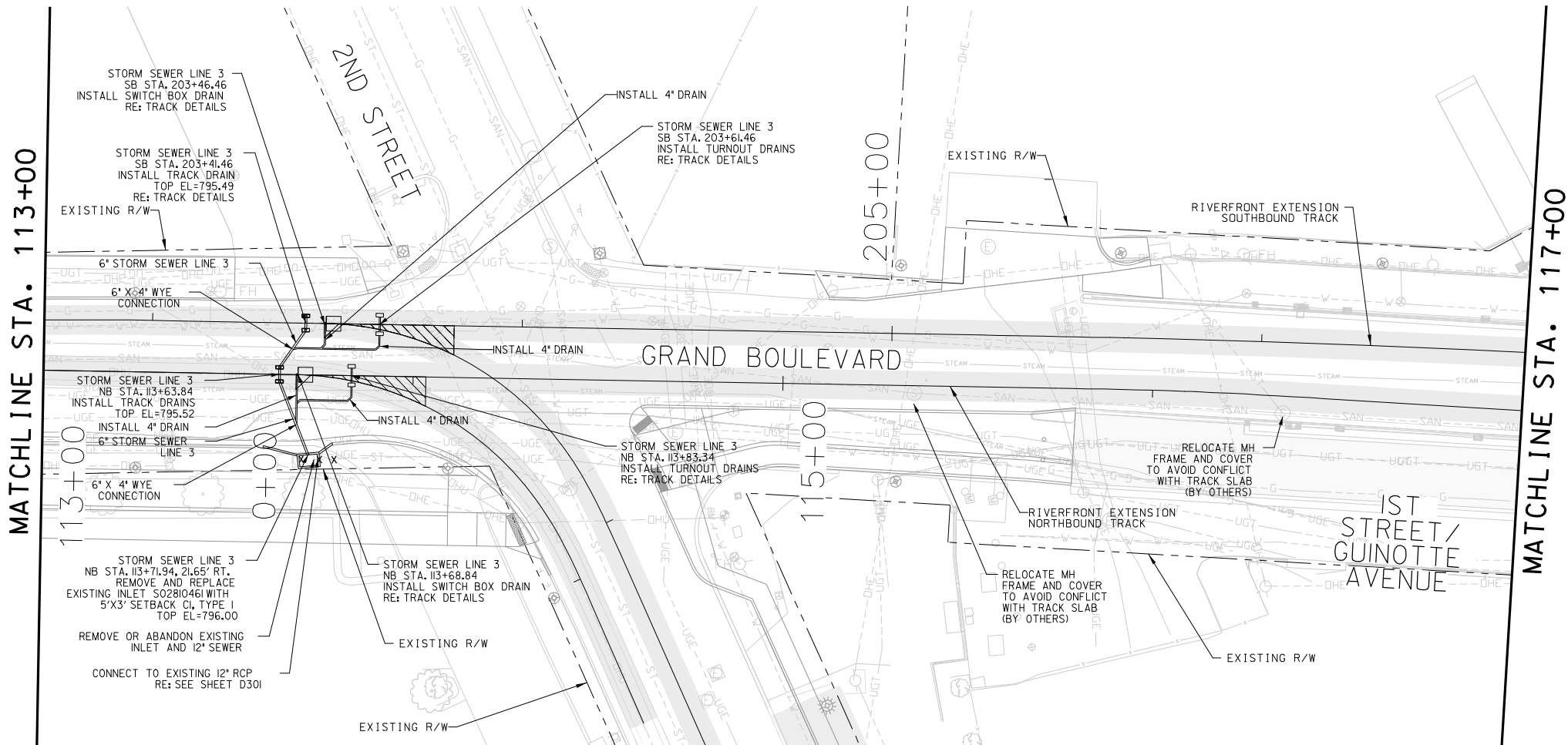
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REV	DATE	DESCRIPTION	DESIGNED BY	MJL					ISSUED FOR BID		DATE: 12-23-2022		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		 Tallafiero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		DRAINAGE PLAN STA BEGIN TO STA 113+00		SCALE FOR 22"x34": H: 1" = 20' V: 1" = 10' FILENAME: D101.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: D101 166	
			CHECKED BY	PY																		
			DRAWN BY	BM																		
			CHECKED BY	ML																		
			APPROVED BY	NKS																		
PLOT DATE: 12/23/2022			9:56:38 AM		DATE		12-23-2022		NOT FOR CONSTRUCTION													

GENERAL NOTES

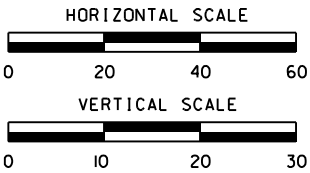
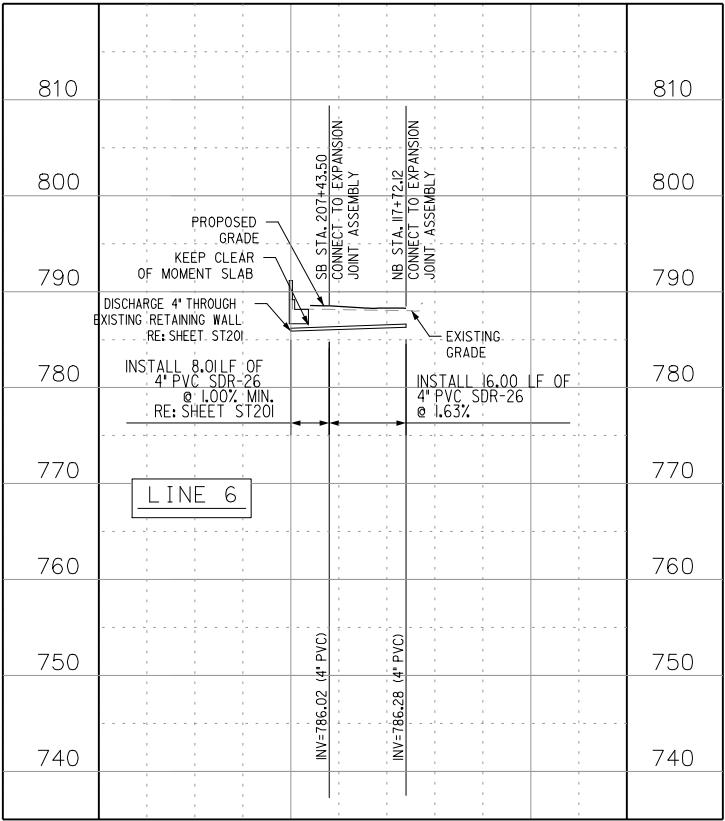
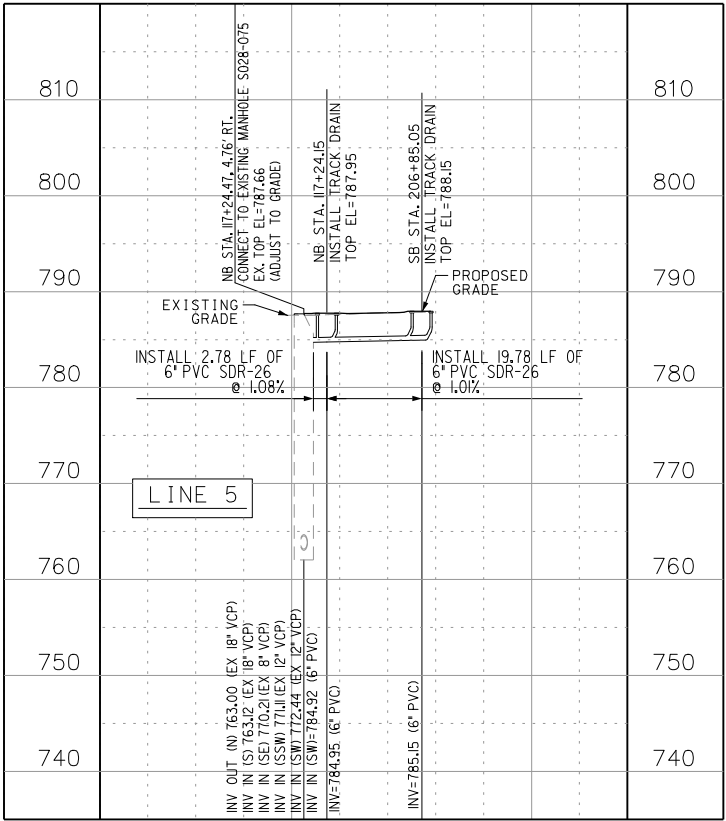
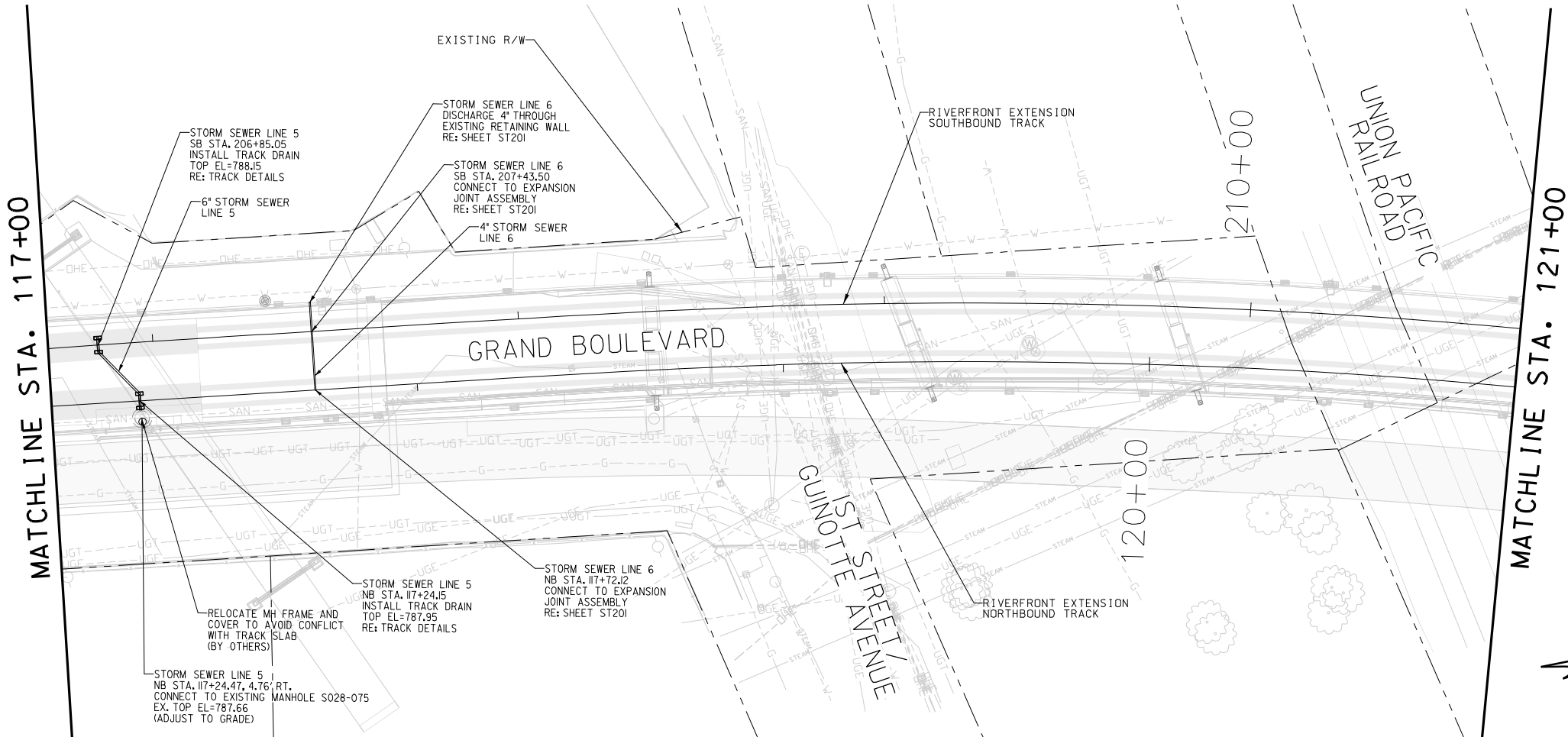
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			CHECKED BY	PY	HDR	HDR Engineering, Inc.	Tallaferra & Browne, Inc.	FILENAME: D102.dgn
			DRAWN BY	BW	10450 Holmes Road	Suite 600	1020 E. 8th Street	CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	ML	14500 Holmes Road	Suite 600	1020 E. 8th Street	VOLUME: VOLUME: 1
			APPROVED BY	NKS	14500 Holmes Road	Suite 600	1020 E. 8th Street	DRAWING NO.: D102
					14500 Holmes Road	Suite 600	1020 E. 8th Street	SHEET NO.: 167
PLOT DATE: 12/23/2022			9:56:41 AM		DATE: 12-23-2022		NOT FOR CONSTRUCTION	

GENERAL NOTES

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REV	DATE	DESCRIPTION

DESIGNED BY	MJL
CHECKED BY	PY
DRAWN BY	BW
CHECKED BY	ML
APPROVED BY	NKS



ISSUED FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

Tallaferrero & Browne, Inc.
1020 E. 9th Street
Kansas City, MO 64106
816-283-3456
Certificate of Authority: 000466

NOT FOR CONSTRUCTION

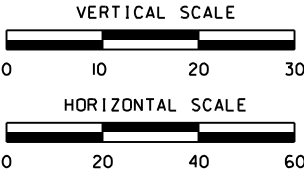
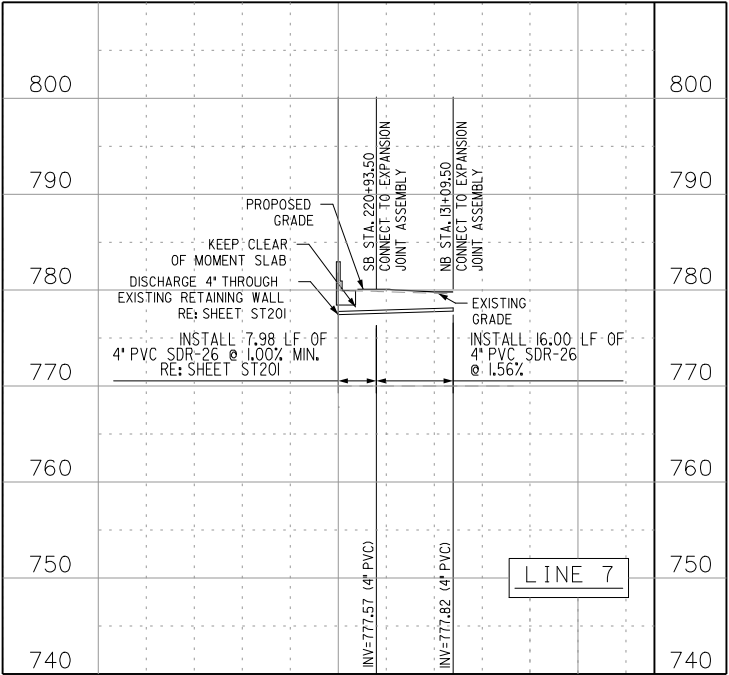
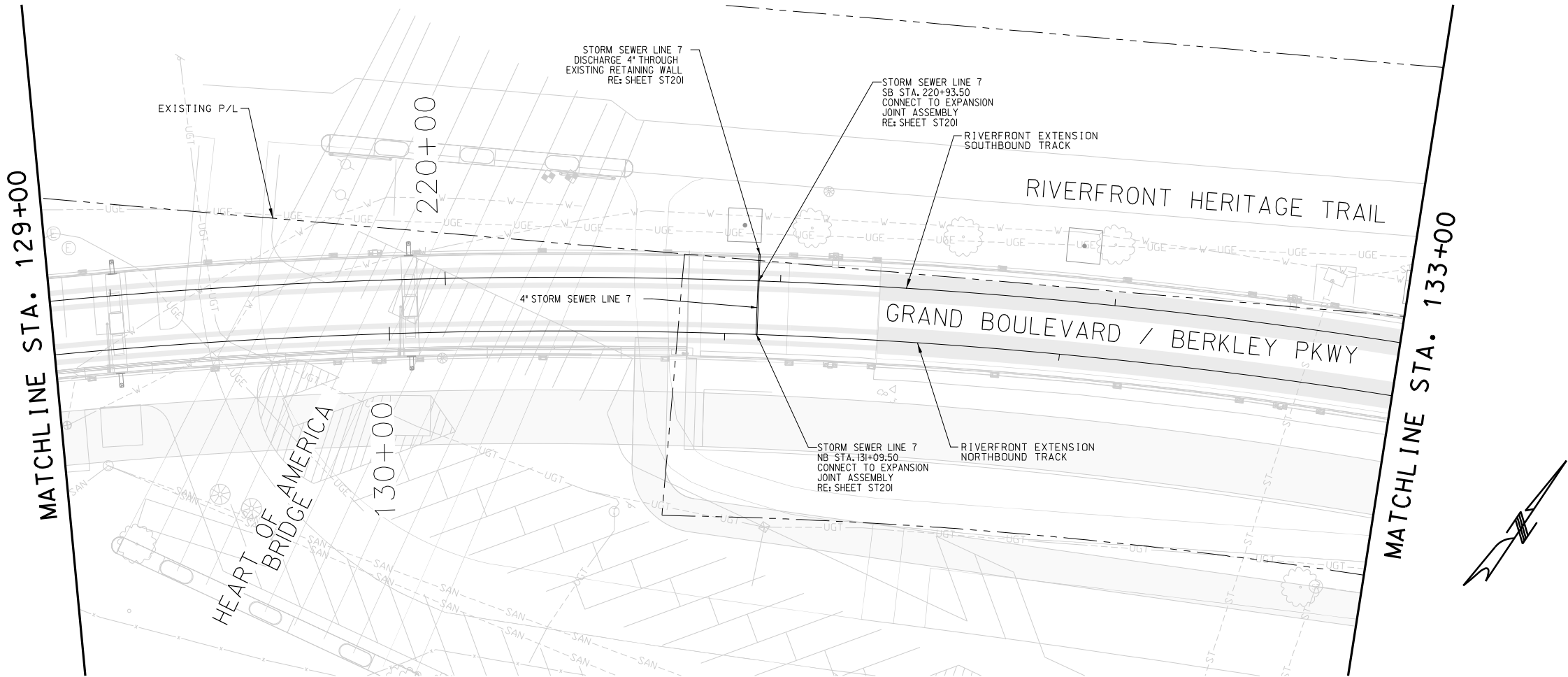
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

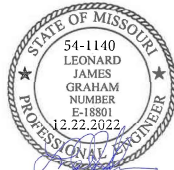
DRAINAGE PLAN
STA 117+00 TO STA 121+00

SCALE FOR 22"x34": H: 1" = 20' V: 1" = 10'
FILENAME: D103.dgn
CONTRACT NO.: CONTRACT NO. ***
VOLUME: DRAWING NO.: SHEET NO.:
D103 168

GENERAL NOTES

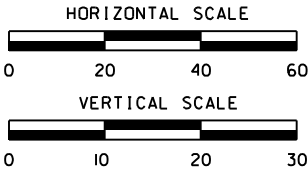
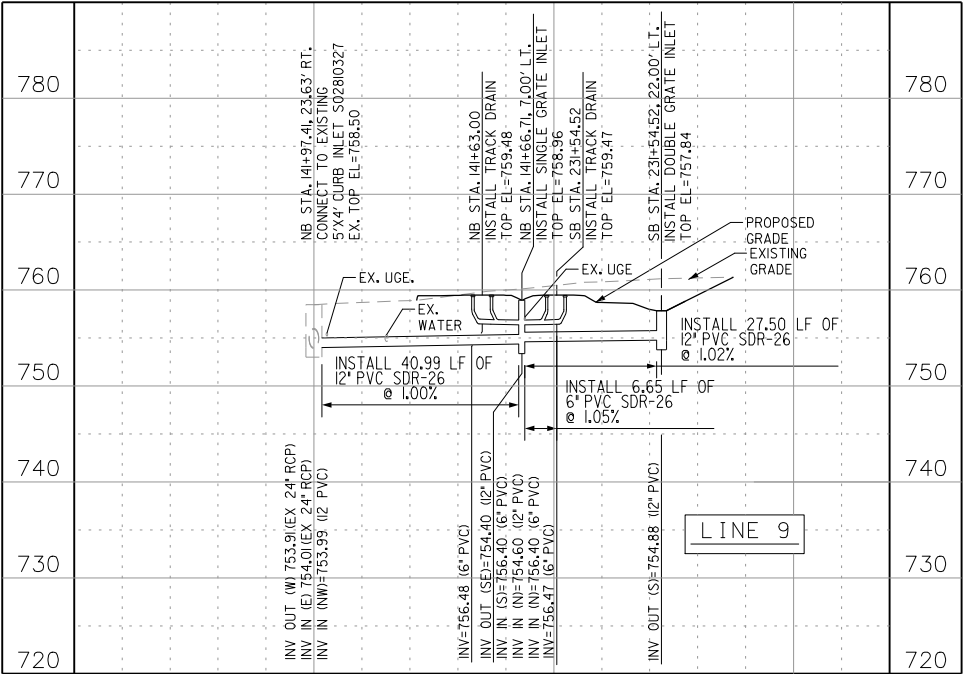
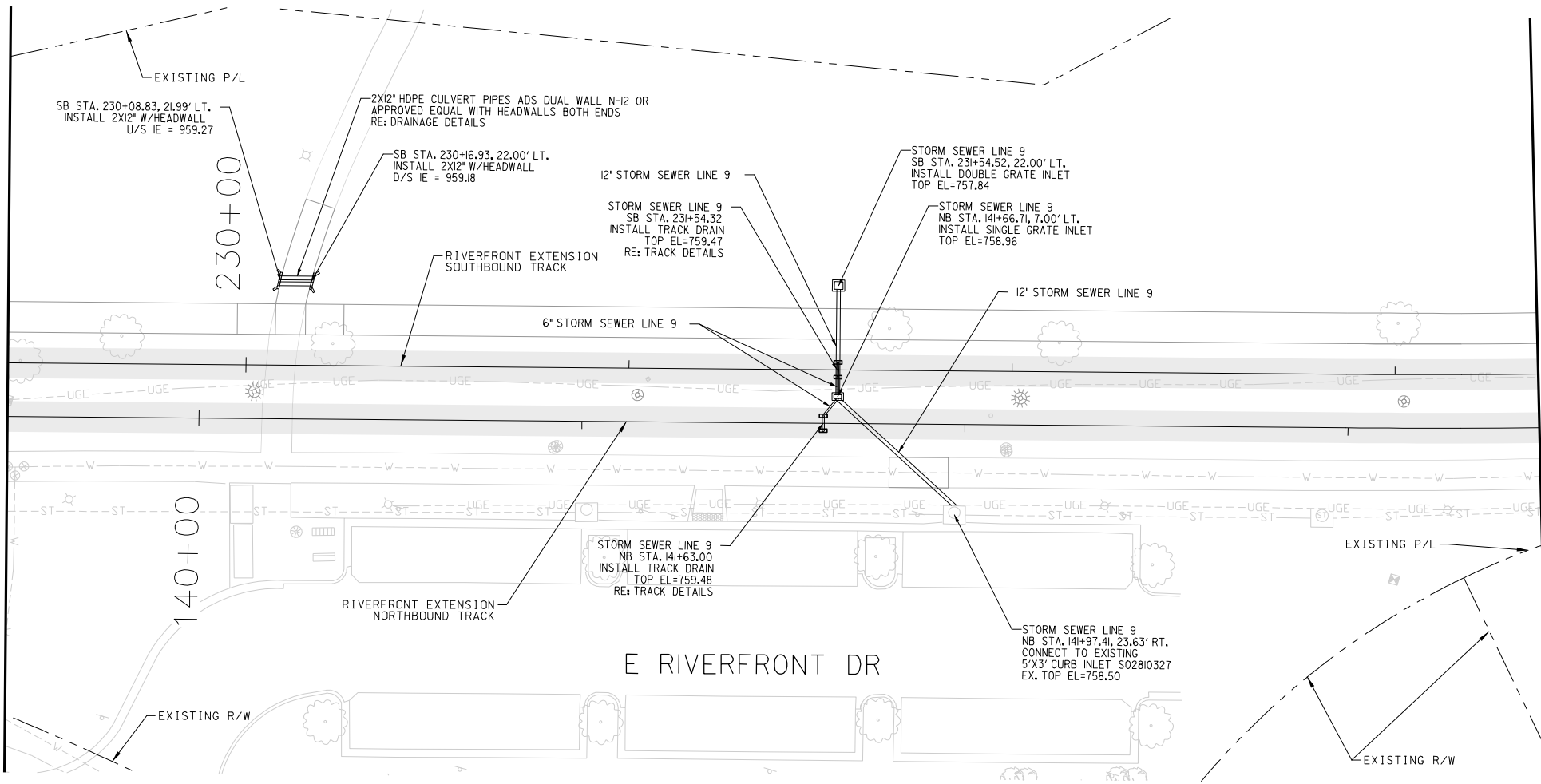
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REV	DATE	DESCRIPTION	DESIGNED BY	MJL			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallaferrro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	DRAINAGE PLAN STA 129+00 TO STA 133+00	SCALE FOR 22"x34": H: 1" = 20' V: 1" = 10'	
			CHECKED BY	PY										FILENAME: D106.dgn
			DRAWN BY	BW										CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	ML										VOLUME: 1
			APPROVED BY	NKS										DRAWING NO.: D106
PLOT DATE: 12/23/2022 9:56:48 AM			DATE	12-23-2022	NOT FOR CONSTRUCTION									

MATCHLINE STA. 139+50

MATCHLINE STA. 143+50



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REV	DATE	DESCRIPTION
PLOT DATE: 12/23/2022		9:56:51 AM

DESIGNED BY	MJL
CHECKED BY	PY
DRAWN BY	BM
CHECKED BY	ML
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	TB Tallafarro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466
NOT FOR CONSTRUCTION	

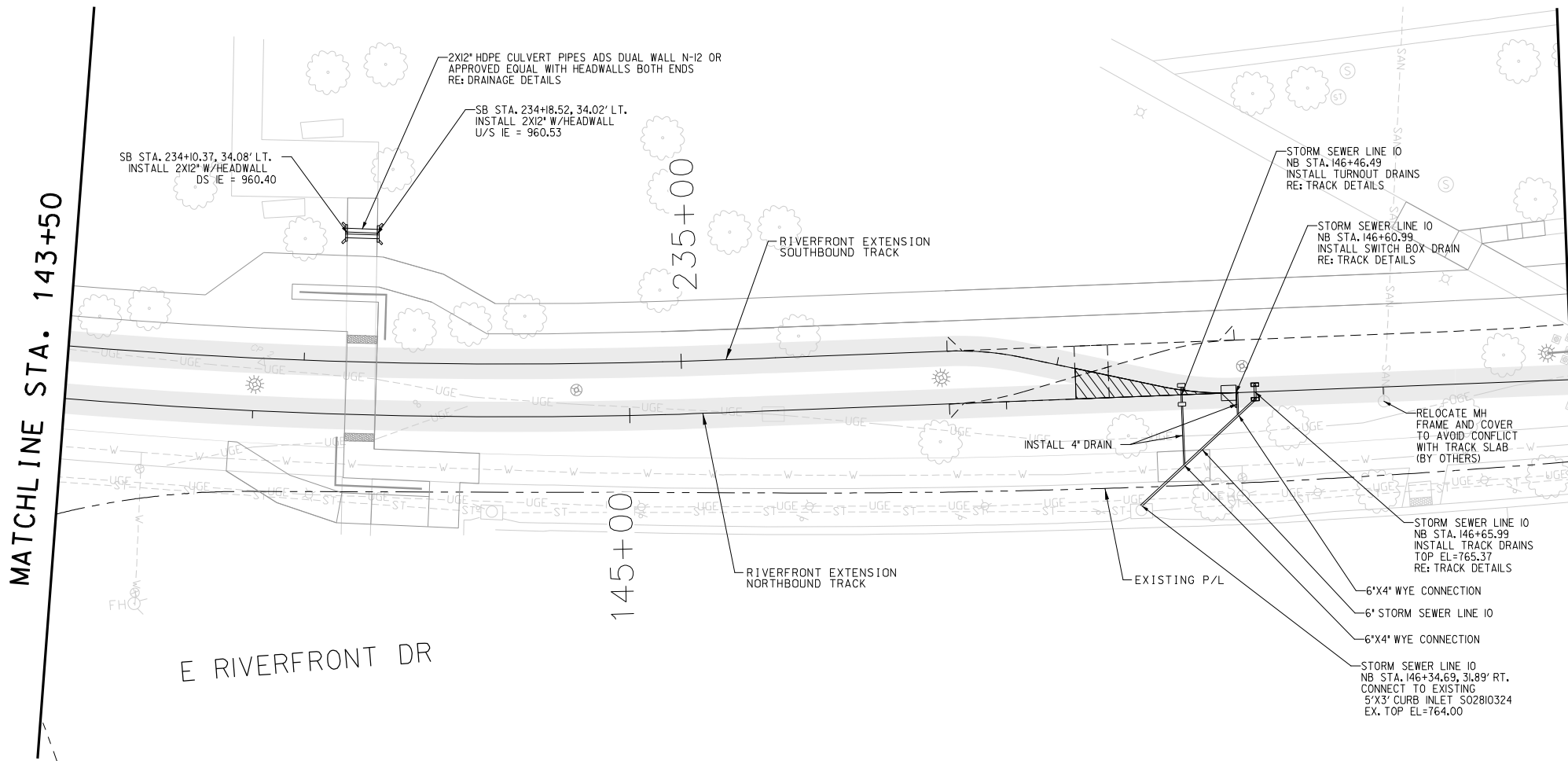
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

DRAINAGE PLAN
STA 139+50 TO STA 143+50

SCALE FOR 22"x34": H: 1" = 20' V: 1" = 10'	
FILENAME: D109.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 	
DRAWING NO.: D109	SHEET NO.: 170

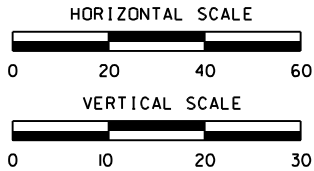
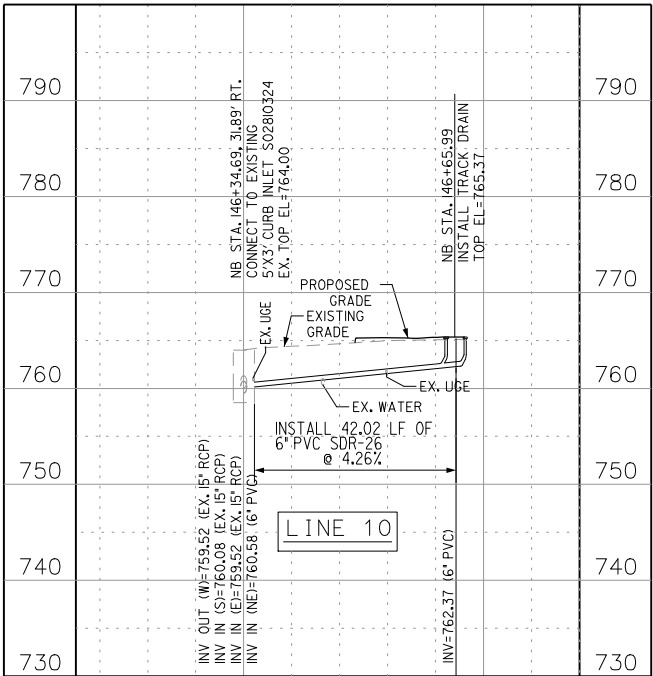
MATCHLINE STA. 143+50

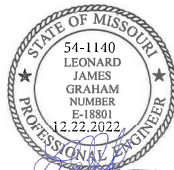
MATCHLINE STA. 147+50

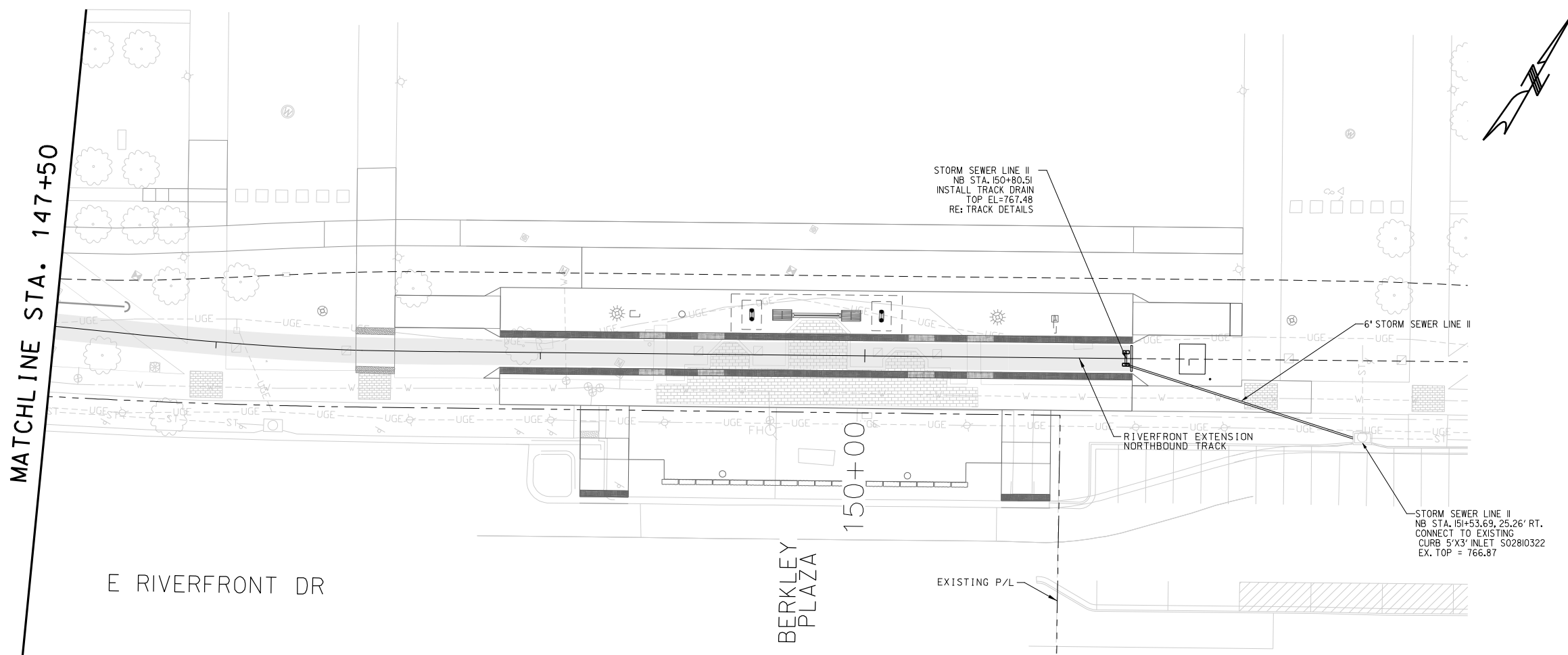


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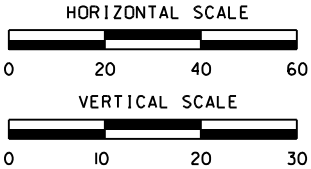
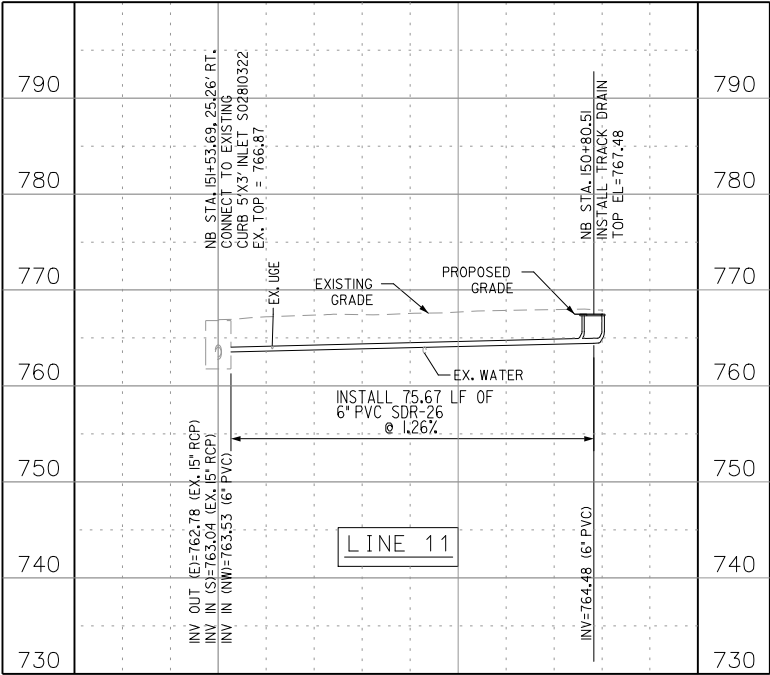
E RIVERFRONT DR

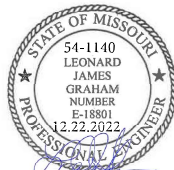


REV	DATE	DESCRIPTION	DESIGNED BY	MJL			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": H: 1" = 20' V: 1" = 10'			
			CHECKED BY	PY			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallaferrro & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466								
			DRAWN BY	BW												
			CHECKED BY	ML												
			APPROVED BY	NKS												
PLOT DATE: 12/23/2022			9:56:54 AM		DATE		12-23-2022		NOT FOR CONSTRUCTION		DRAINAGE PLAN STA 143+50 TO STA 147+50		DRAWING NO.: D110		SHEET NO.: 171	



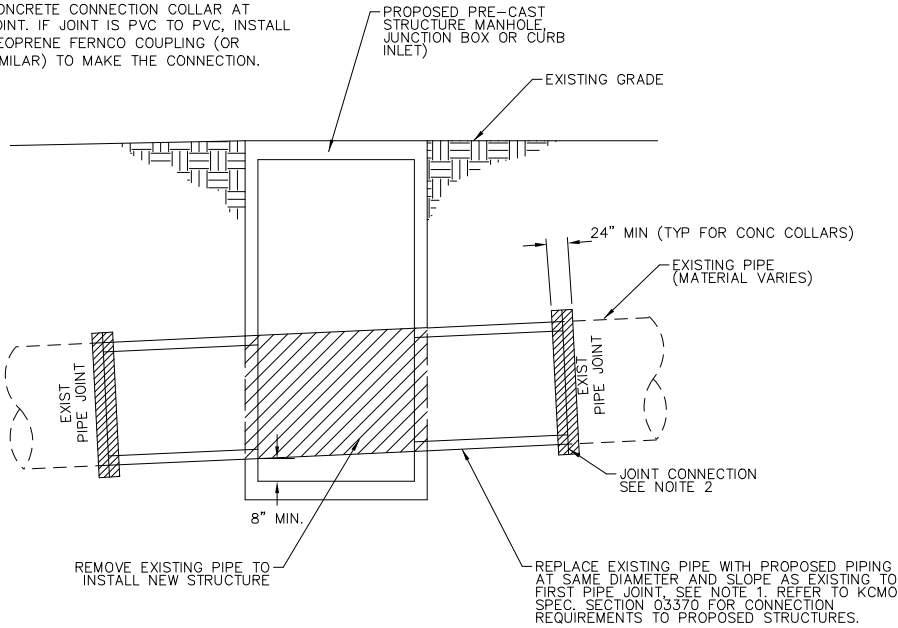
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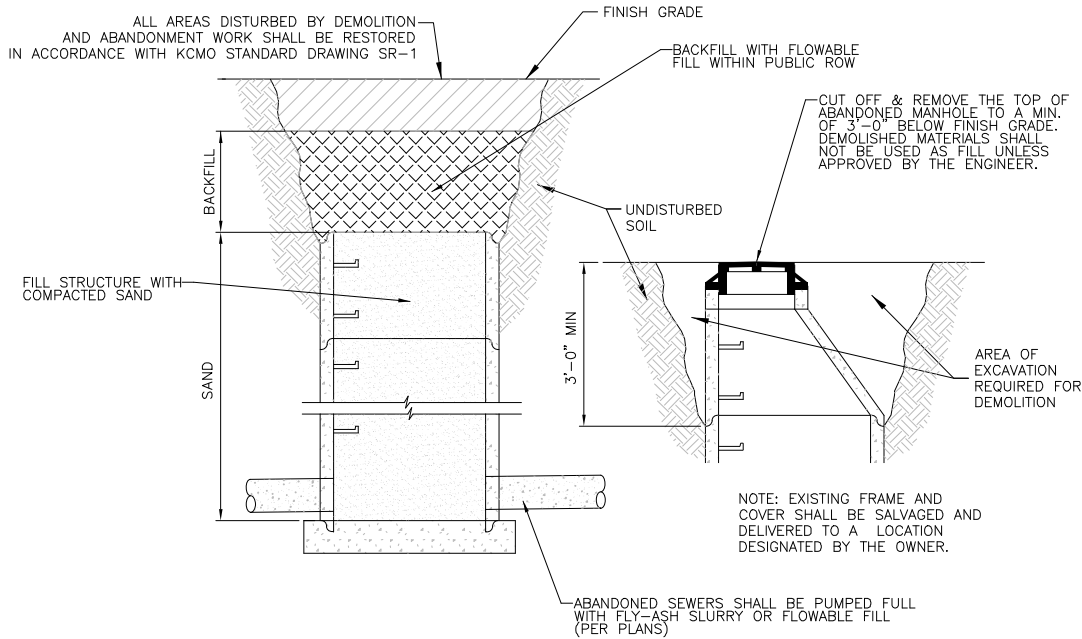
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			CHECKED BY	PY												
			DRAWN BY	BW												
			CHECKED BY	ML												
			APPROVED BY	NKS												
PLOT DATE: 12/23/2022			9:56:57 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION									

NOTES:

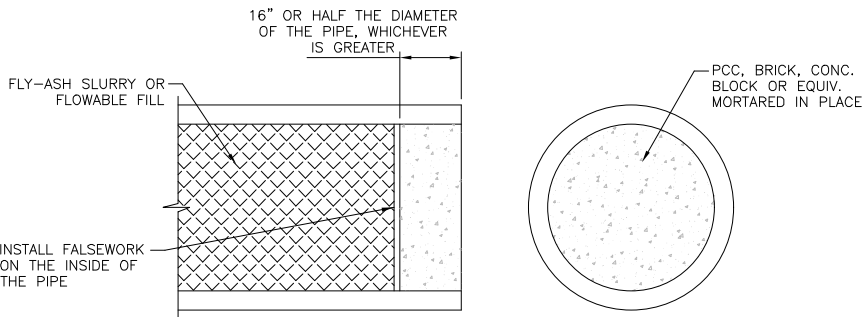
- IF EXISTING PIPE IS RCP, REPLACE WITH PROPOSED RCP. IF EXISTING PIPE IS VCP, REPLACE WITH PROPOSED PVC PIPE.
- IF JOINT IS RCP TO RCP, INSTALL CONCRETE CONNECTION COLLAR AT JOINT. IF JOINT IS PVC TO PVC, INSTALL NEOPRENE FERNCO COUPLING (OR SIMILAR) TO MAKE THE CONNECTION.



PROPOSED STRUCTURE INSTALLATION WITH EXISTING PIPE CONNECTION
N.T.S.



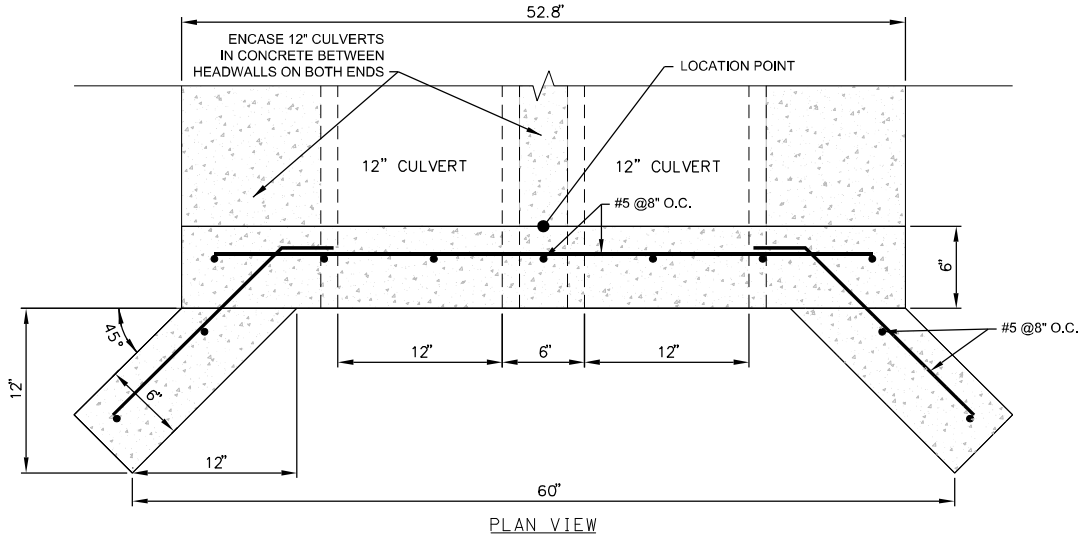
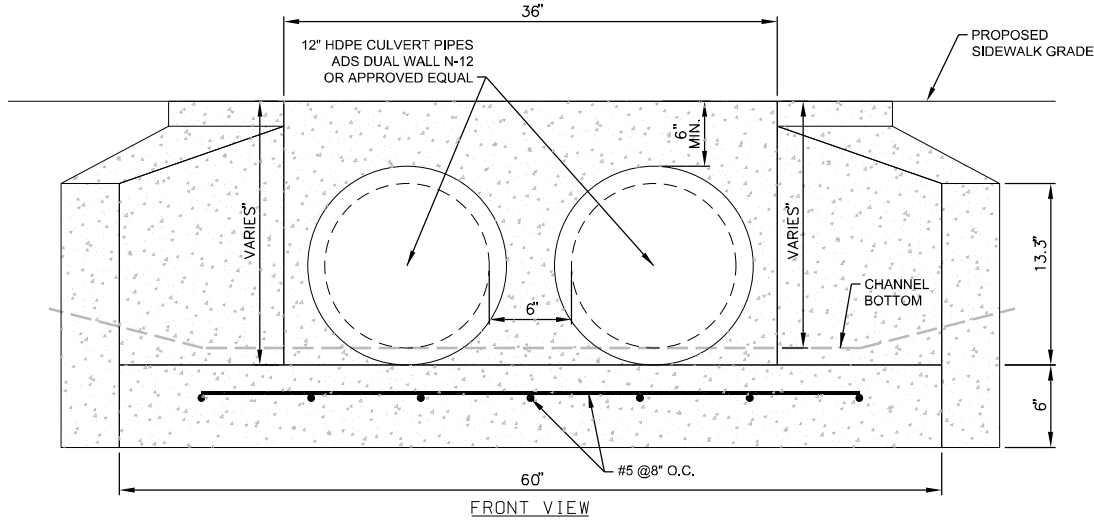
MANHOLE AND SEWER ABANDONMENT
N.T.S.



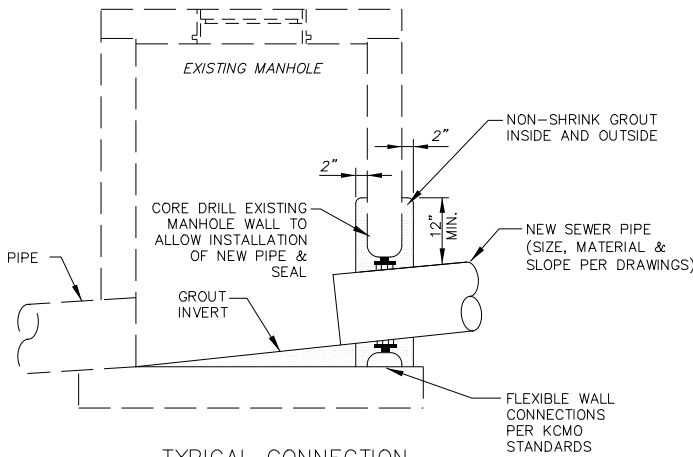
NOTE:
FOR PLUGGING EXISTING SEWER (OVER 18" DIA.).

NOTE:
FOR PLUGGING EXISTING SEWER (18" AND SMALLER).

STANDARD SEWER PLUG FOR ABANDONMENT
N.T.S.



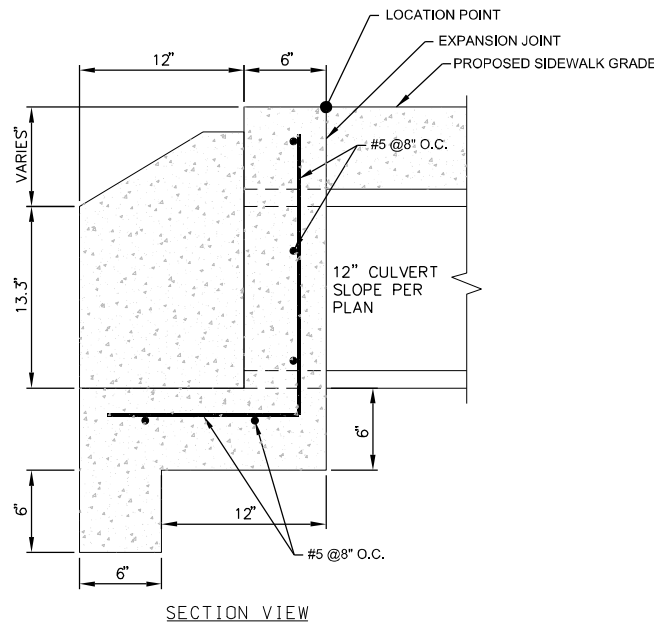
CULVERT HEADWALL
N.T.S.



TYPICAL CONNECTION
TO EXISTING MANHOLE
N.T.S.

CULVERT HEADWALL NOTES:

- CONCRETE SHALL BE 4,000 PSI STRENGTH @ 28 DAYS; 2 INCH ± 1 INCH SLUMP; AND 6% ± 1% AIR ENTRAINMENT.
- PLACEMENT ON 4 INCH THICK AB3 GRAVEL BASE OVER SUB-GRADE, EACH COMPACTED TO 95% MAXIMUM DENSITY AT OPTIMUM MOISTURE.
- REINFORCING STEEL SHALL MEET OR EXCEED ALL REQUIREMENTS OF ASTM A615, GRADE 60 AND/OR ASTM A706 WITH MIN 2" CLEARANCE.
- EXPOSED CONCRETE SURFACES SHALL BE SMOOTH. CHAMFER OR RADIUS ALL CORNERS AT 1".
- CURING: ONE COAT OF WHITE PIGMENTED LIQUID MEMBRANE FORMING COMPOUND TYPE 2 IN ACCORDANCE WITH ASTM C-309, APPLIED AT 250-275 SQ. FT/GALLON OR APPROVED EQUAL.
- REFER TO DRAINAGE PLANS FOR CULVERT LOCATIONS AND FLOW LINES.
- REFER TO GRADING PLANS FOR PROPOSED SIDEWALK ELEVATIONS
- CULVERT PIPES SHALL BE CONCRETE ENCASED BELOW PROPOSED SIDEWALK AS SHOWN.



REV	DATE	DESCRIPTION	DESIGNED BY	MJL
			CHECKED BY	PY
			DRAWN BY	BW
			CHECKED BY	ML
			APPROVED BY	NKS
PLOT DATE: 12/23/2022			DATE	12-23-2022



ISSUED FOR BID

HDR
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

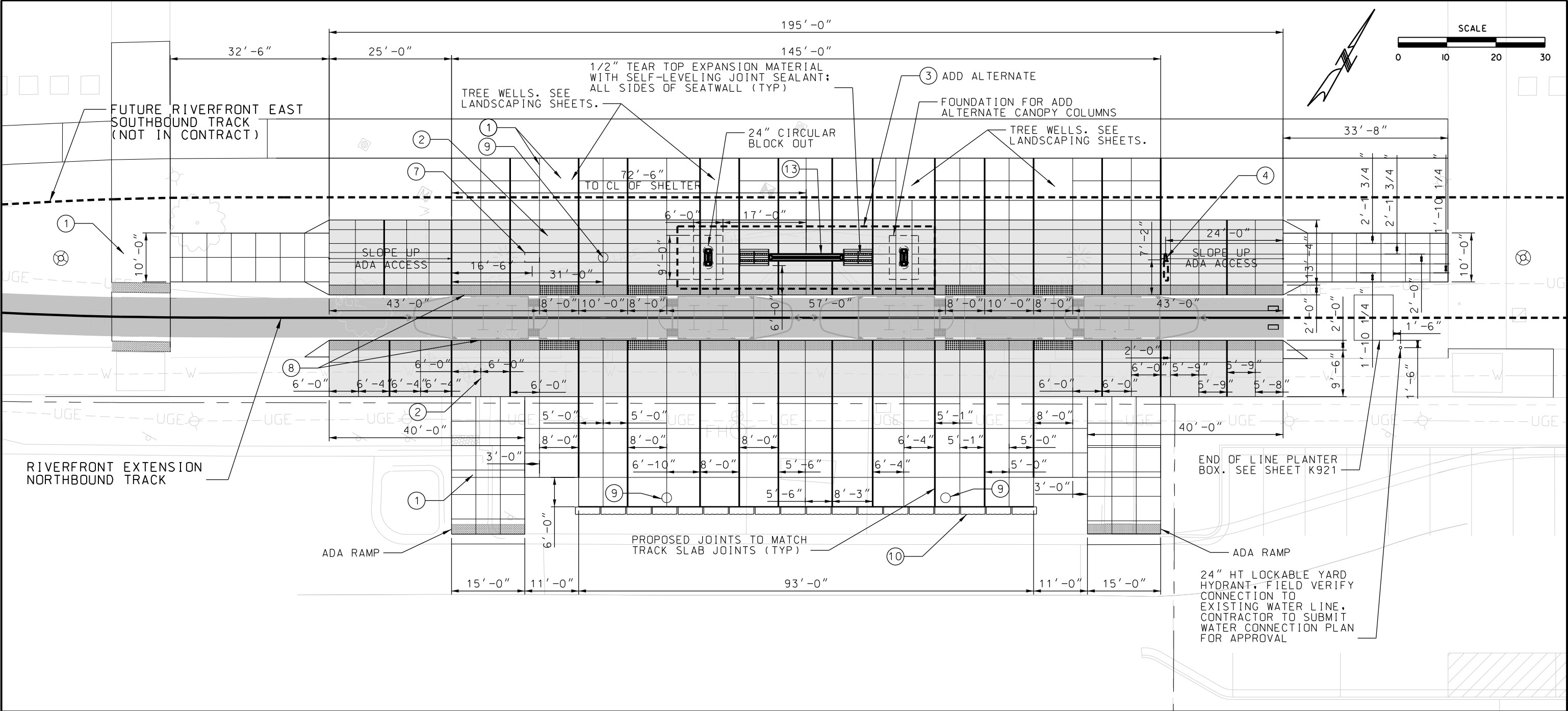
DATE: 12-23-2022

T&B
Tallafiero & Browne, Inc.
1020 E. 8th Street
Kansas City, MO 64106
816-283-3456
Certificate of Authority: 000466

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

MISCELLANEOUS DRAINAGE DETAILS

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: 030i.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
D301	173



GENERAL NOTES:

- 1 PLATFORM CONCRETE PAVING TO MATCH DOWNTOWN KCMO STANDARD WITH WHITE PORTLAND CEMENT APPEARANCE
- 2 SEE C200s FOR TOPOGRAPHIC ELEVATIONS
- 3 SEE PS302 AND PS303 FOR PLATFORM STRUCTURAL REQUIREMENTS AND REINFORCEMENT
- 4 PAVING ADJACENT TO PLATFORM TO MATCH EXISTING SIDEWALK MATERIAL

KEYNOTES:

- 1 WALKWAYS/SIDEWALKS (REF: C005)
- 2 PLATFORM PAVING
- 3 CANOPY
- 4 MARKER (REF: P371)
- 5 SYSTEMS HANDHOLE
- 6 POWER HANDHOLE
- 7 FUTURE INTERACTIVE KIOSK/TICKET VENDING (REF: 7/P203)
- 8 STREETCAR PLATFORM CURB (REF: 5/P203)
- 9 LITTER RECEPTACLE (REF: 1/P203)
- 10 LIMESTONE BLOCK SEAT WALL (REF: 3/P203)
- 11 DECORATIVE RAILING (REF: 8/P203)
- 12 TYPE A SHELTER (REF: P302)
- 13 TYPE B SHELTER (REF: P310)
- 14 SEAT WALL WITH DECORATIVE RAILING (REF: 2/P203)

LEGEND:

- PLATFORM
- EXIST R/W
- TRACK
- ITS CABINET AND METER
- DETECTABLE WARNING TILE
- DETECTABLE WARNING TILE (ADA LOADING, WHERE SHOWN)
- ADA ACCESSIBLE ROUTE
- OCS W/ LIGHT POLE
- OCS CATENARY POLE, (REF: OVERHEAD CONTACT SYSTEM PLANS)
- EXISTING POLE
- EXIST OR RELOCATED LIGHT POLE
- OCS ON EXISTING POLE
- ADA 5'-0" CLEAR AREA

REV	DATE	DESCRIPTION

DESIGNED BY	SC
CHECKED BY	CJH
DRAWN BY	SC
CHECKED BY	CJH
APPROVED BY	NKS



ISSUED FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
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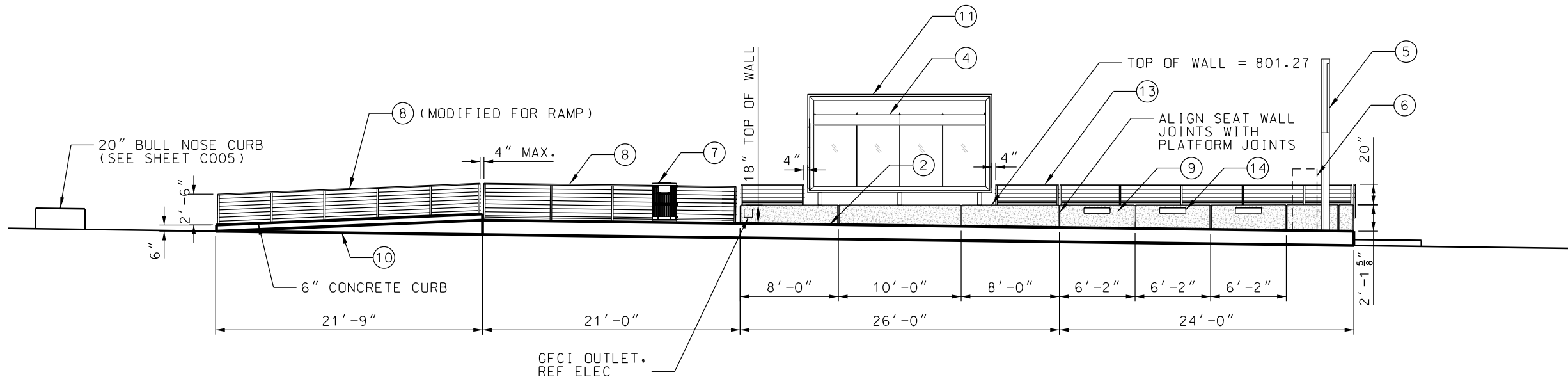
The HNTB Companies
715 Kirk Drive
Kansas City, MO 64105
816-472-1201
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

**"RIVERFRONT"
PLATFORM PLAN**

SCALE FOR 22"x34": 1" = 10'	
FILENAME: P102.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.: P102	SHEET NO.: 175

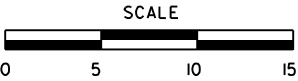


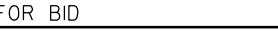
ELEVATION FACING WEST

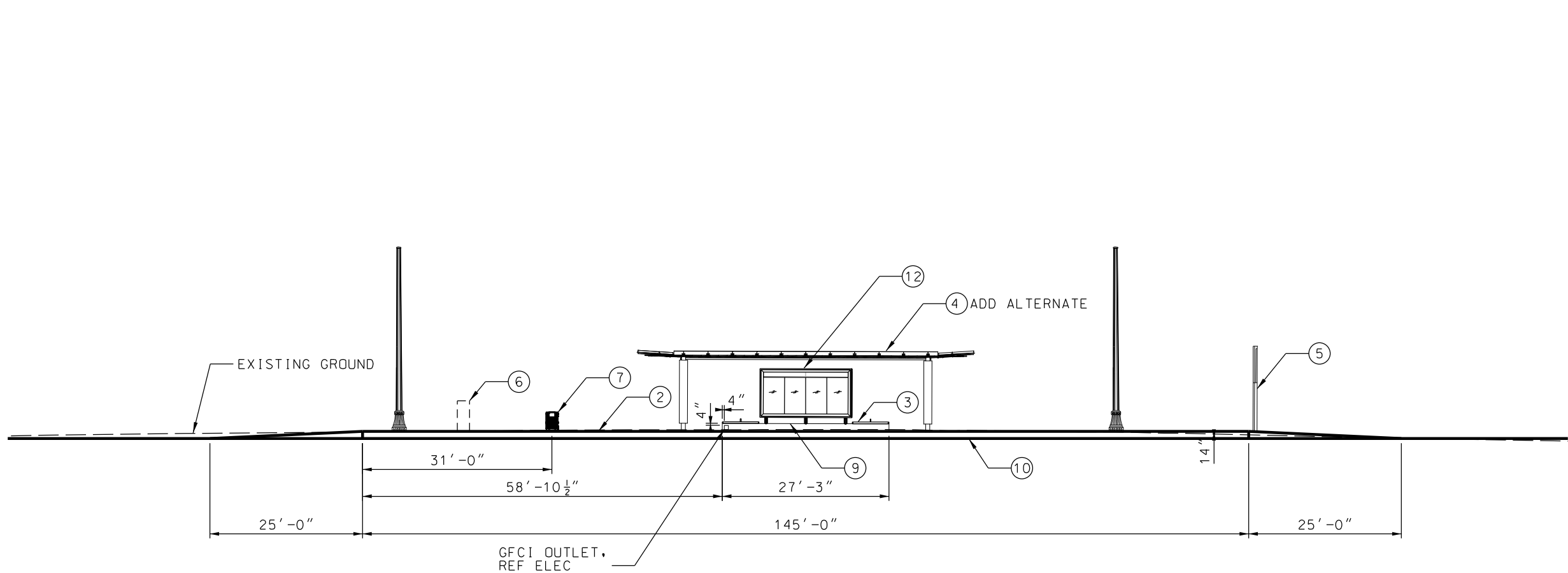
- KEYNOTES:**
- 1 WALKWAYS/SIDEWALKS (REF: C005)
 - 2 PLATFORM (REF: PS302,PS303)
 - 3 SHELTER BENCH
 - 4 CANOPY
 - 5 MARKER (REF: P371)
 - 6 FUTURE INTERACTIVE KIOSK/TICKET VENDING
 - 7 LITTER RECEPTACLE (REF: 1/P203)
 - 8 DECORATIVE RAILING (REF: 8/P203)
 - 9 CONCRETE WALL AS CAST FORM FINISH - SMOOTH (REF: 6/P203)
 - 10 PROFILE GRADE OF TRACK
 - 11 TYPE A SHELTER (REF: P302)
 - 12 TYPE B SHELTER (REF: P310)
 - 13 SEAT WALL WITH DECORATIVE RAILING (REF: 2/P203)
 - 14 LINEAR LED STRIP LIGHTING IN SEAT WALL (1/P204)

GENERAL NOTE:

- 1 SEE SHEET P203 FOR PLATFORM FURNISHINGS SCHEDULE
- 2 SEE CIVIL DRAWINGS FOR SLOPE OF SIDEWALKS



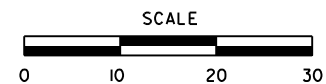
REV	DATE	DESCRIPTION	DESIGNED BY	AJC			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 5'
			CHECKED BY	CJH			FILENAME: P201.dgn					
			DRAWN BY	AJC			CONTRACT NO.: CONTRACT NO. ***					
			CHECKED BY	CJH			VOLUME: I					
			APPROVED BY	NKS			DRAWING NO.: P201	SHEET NO.: 176				
PLOT DATE: 12/22/2022			4:12:22 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION					



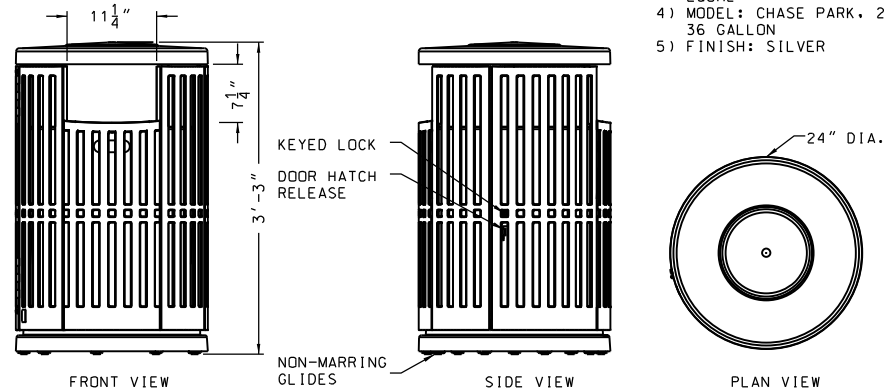
- KEYNOTES:**
- 1 WALKWAYS/SIDEWALKS (REF: C005)
 - 2 PLATFORM (REF: PS302,PS303)
 - 3 SHELTER BENCH
 - 4 CANOPY
 - 5 MARKER (REF: P371)
 - 6 FUTURE INTERACTIVE KIOSK/TICKET VENDING
 - 7 LITTER RECEPTACLE (REF: 1/P203)
 - 8 DECORATIVE RAILING (REF: 8/P203)
 - 9 CONCRETE WALL AS CAST FORM FINISH - SMOOTH (REF: 6/P203)
 - 10 PROFILE GRADE OF TRACK
 - 11 TYPE A SHELTER (REF: P302)
 - 12 TYPE B SHELTER (REF: P310)
 - 13 SEAT WALL WITH DECORATIVE RAILING (REF: 2/P203)
 - 14 LINEAR LED STRIP LIGHTING IN SEAT WALL (1/P204)

GENERAL NOTE:

- 1 SEE SHEET P203 FOR PLATFORM FURNISHINGS SCHEDULE
- 2 SEE CIVIL DRAWINGS FOR SLOPE OF SIDEWALKS

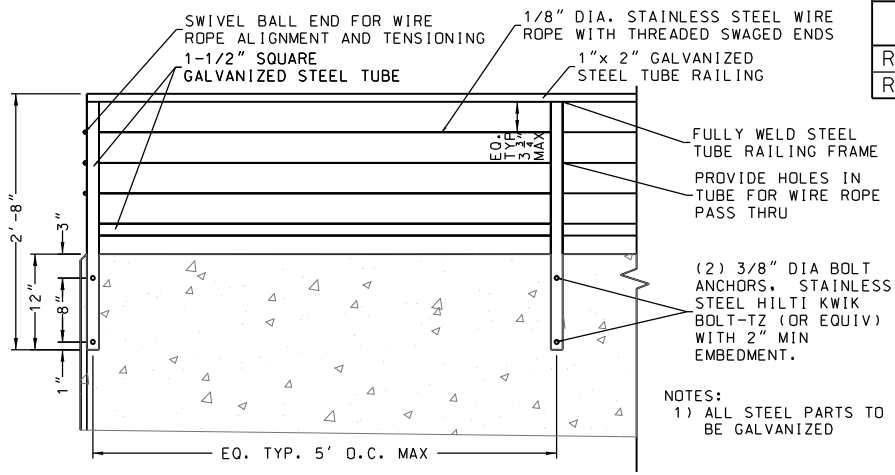


REV	DATE	DESCRIPTION	DESIGNED BY	AJC			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	"RIVERFRONT" PLATFORM ELEVATION	SCALE FOR 22"x34": 1" = 10'	
			CHECKED BY	CJH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270			FILENAME:	
			DRAWN BY	AJC							CONTRACT NO.:	
			CHECKED BY	CJH							CONTRACT NO. ***	
			APPROVED BY	NKS							VOLUME:	
PLOT DATE: 12/22/2022 4:12:25 PM			DATE	12-23-2022					DRAWING NO.:	SHEET NO.:		
							NOT FOR CONSTRUCTION		P202	177		



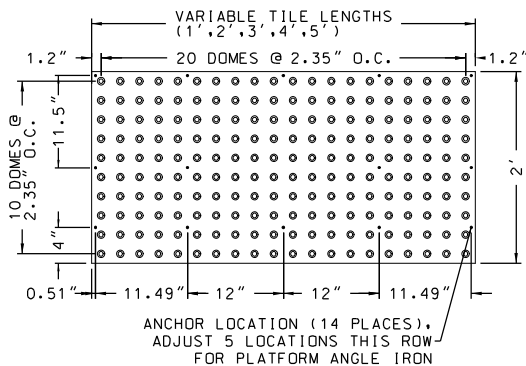
TYP. LITTER RECEPTACLE
1" = 1'

- NOTES:
1) INSTALL PER MANF. INSTRUCTIONS
2) DIMENSIONS ARE IN INCHES
3) LANDSCAPE FORMS OR APPROVED EQUAL
4) MODEL: CHASE PARK, 24" DIA. 36 GALLON
5) FINISH: SILVER

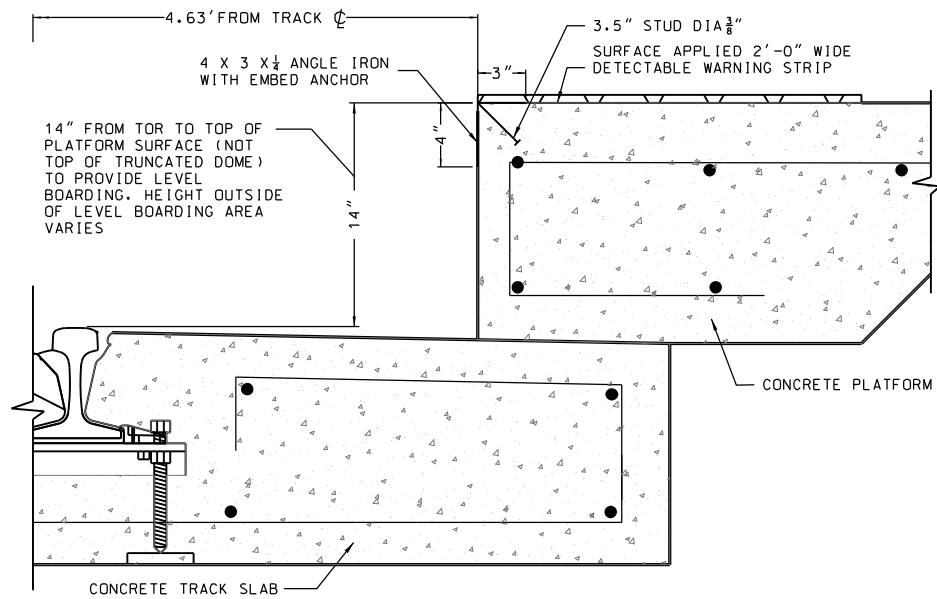


SEAT WALL RAILING
1" = 1'

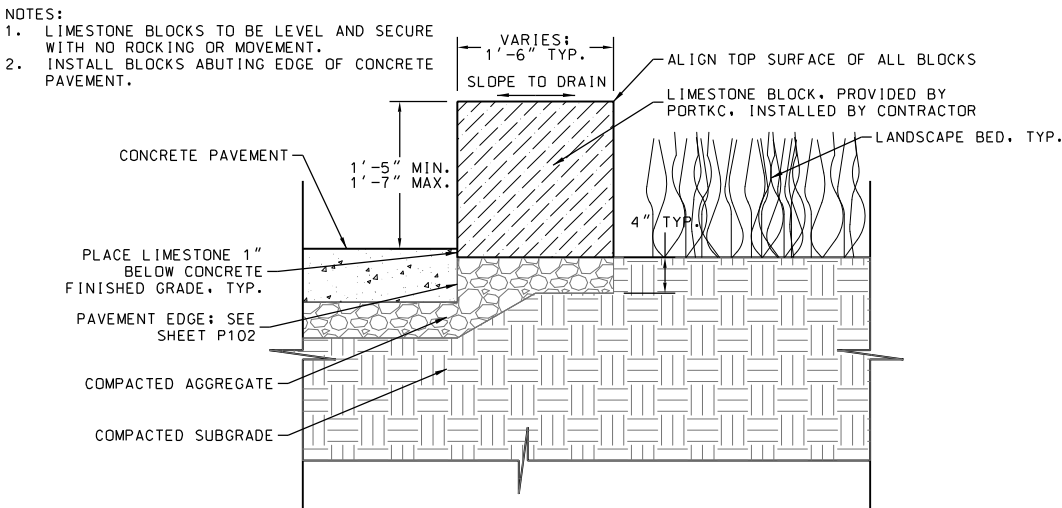
- NOTES:
1) TUFTILE 16 GA. GALVANIZED STEEL TILE OR APPROVED EQUAL, SURFACE APPLIED TACTILE WARNING SYSTEM, 24" X VARIABLE TILE LENGTHS, POWDERCOAT DARK GRAY COLOR #36118 FOR STREETCAR STOP PLATFORMS. BLUE #15187 FOR STREETCAR ADA BOARDING AREAS AT RIVER MARKET NORTH AND RIVERFRONT STOPS (SEE PLANS).



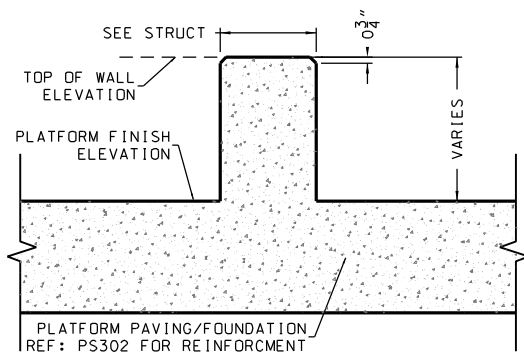
DETECTABLE WARNING STRIP
1" = 1'



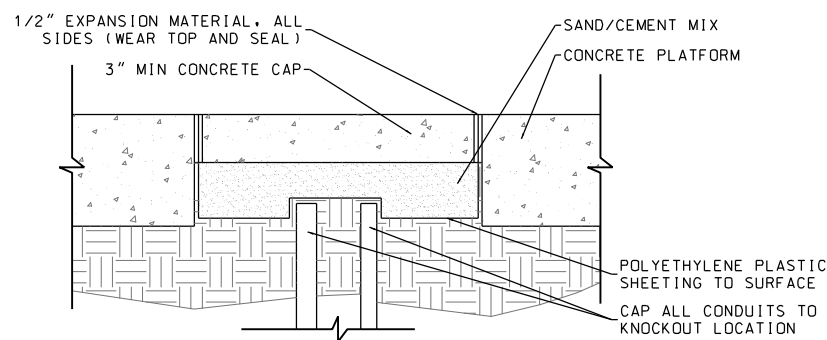
STREETCAR PLATFORM CURB
1" = 1'



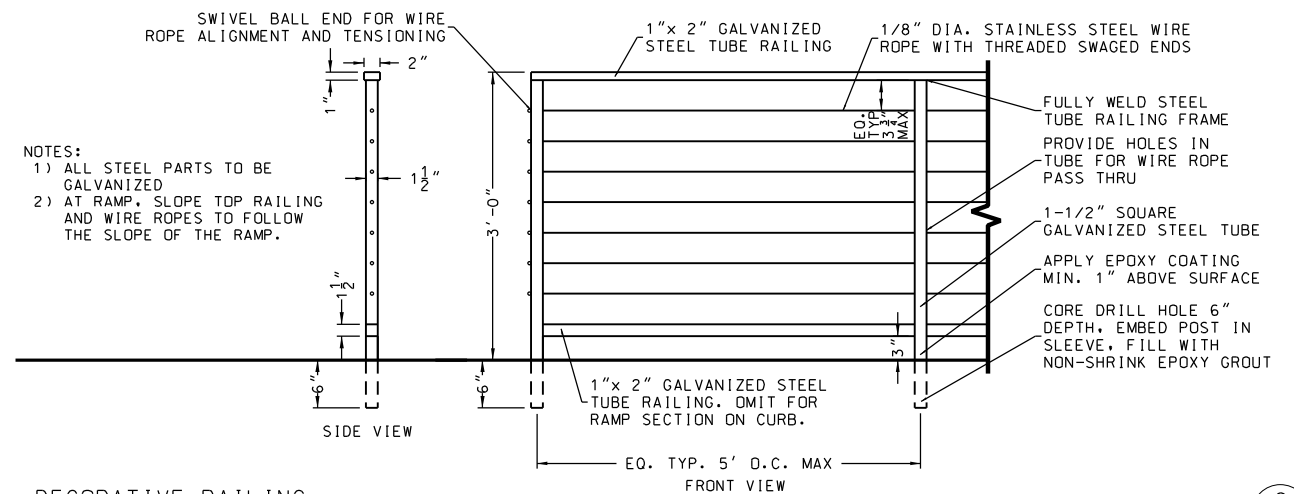
TYP. LIMESTONE BLOCK SEAT WALL
1" = 1'



SHELTER WALL SECTION
1" = 1'



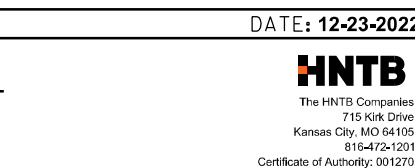
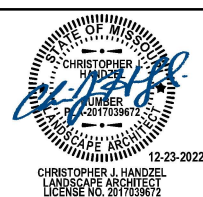
CONCRETE KNOCKOUT - FUTURE KIOSK/TICKET VENDING
1/2" = 1'



DECORATIVE RAILING
1" = 1'

STREETCAR STOP - FURNISHINGS SCHEDULE				
LOCATION	TYPE A SHELTER	TYPE B SHELTER	MARKER	LITTER RECEPTACLE
RIVER MARKET NORTH (NB)	1	0	1	1
RIVERFRONT (NB/SB)	0	1	1	3

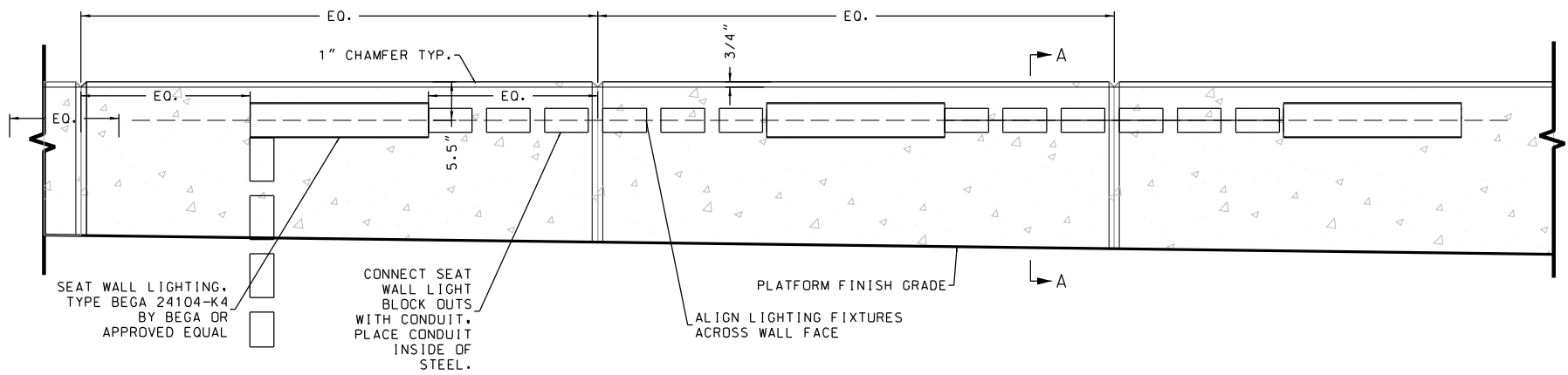
REV	DATE	DESCRIPTION	DESIGNED BY	SC
			CHECKED BY	CJH
			DRAWN BY	SC
			CHECKED BY	CJH
			APPROVED BY	NKS



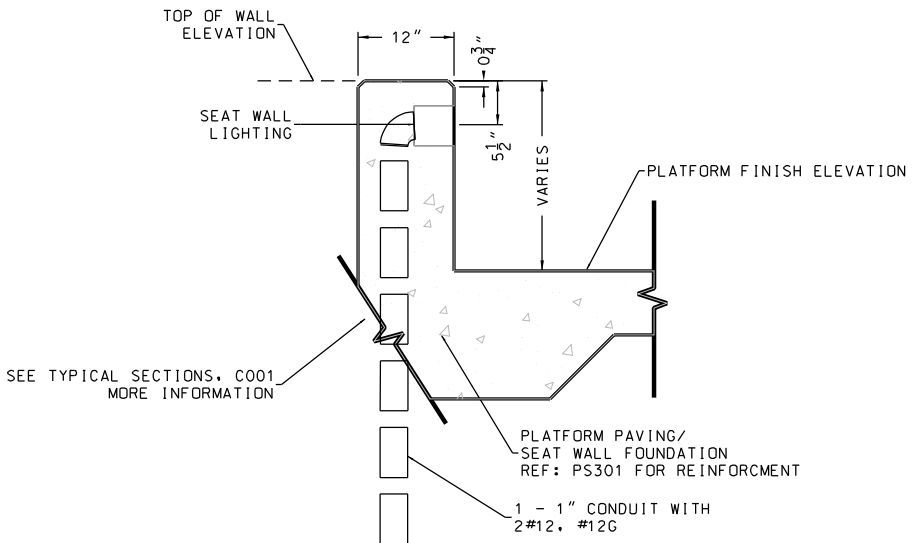
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

PLATFORM SITE DETAILS

SCALE: FOR 22"x34": AS NOTED	FILENAME: P203.dgn
CONTRACT NO.: CONTRACT NO. ***	VOLUME: 1
DRAWING NO.: P203	SHEET NO.: 178



ELEVATION VIEW – FROM STREET

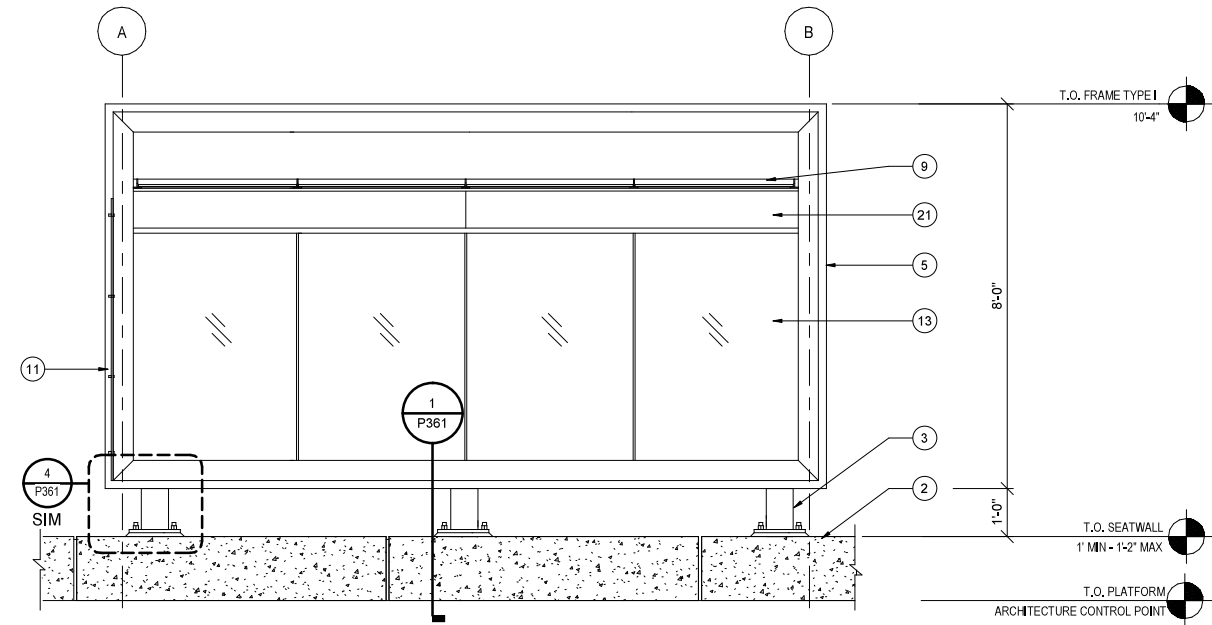


SECTION A-A

PLATFORM SEAT WALL
1" = 1'

1
—

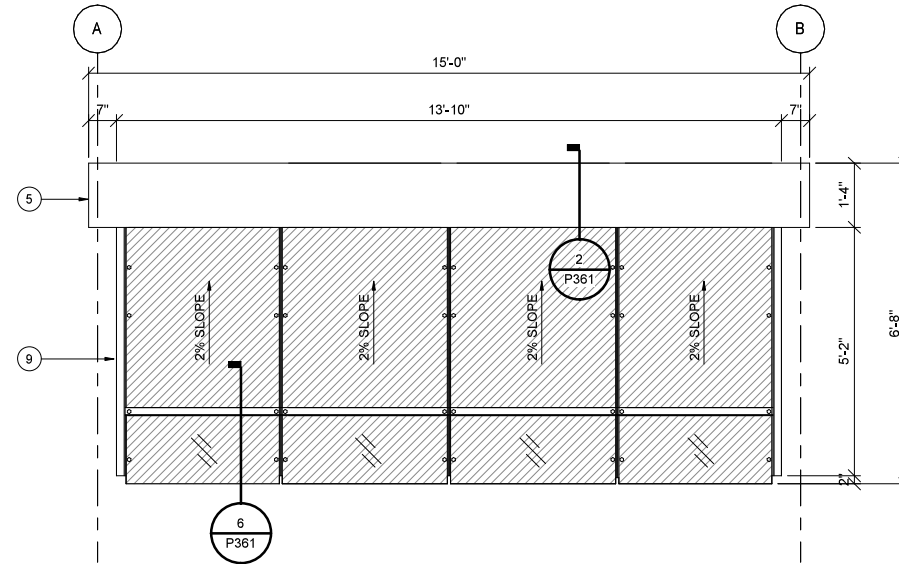
REV			DATE			DESCRIPTION			DESIGNED BY		SC				ISSUED FOR BID				DATE: 12-23-2022				KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": AS NOTED			
									CHECKED BY		CJH				HDR Engineering, Inc.				The HNTB Companies								FILENAME: P204.dgn			
									DRAWN BY		SC				10450 Holmes Road				715 Kirk Drive				CONTRACT NO.:							
									CHECKED BY		CJH				Suite 600				Kansas City, MO 64110				CONTRACT NO. ***							
									APPROVED BY		NKS				Kansas City, MO 64105				816-472-1201				VOLUME:							
PLOT DATE:			12/22/2022						DATE		12-23-2022				12-23-2022		Certificate of Authority: 000856		Certificate of Authority: 001270						DRAWING NO.:		SHEET NO.:			
																	NOT FOR CONSTRUCTION								P204		179			



"TYPE A" SHELTER FRONT ELEVATION

1/2" = 1'-0"

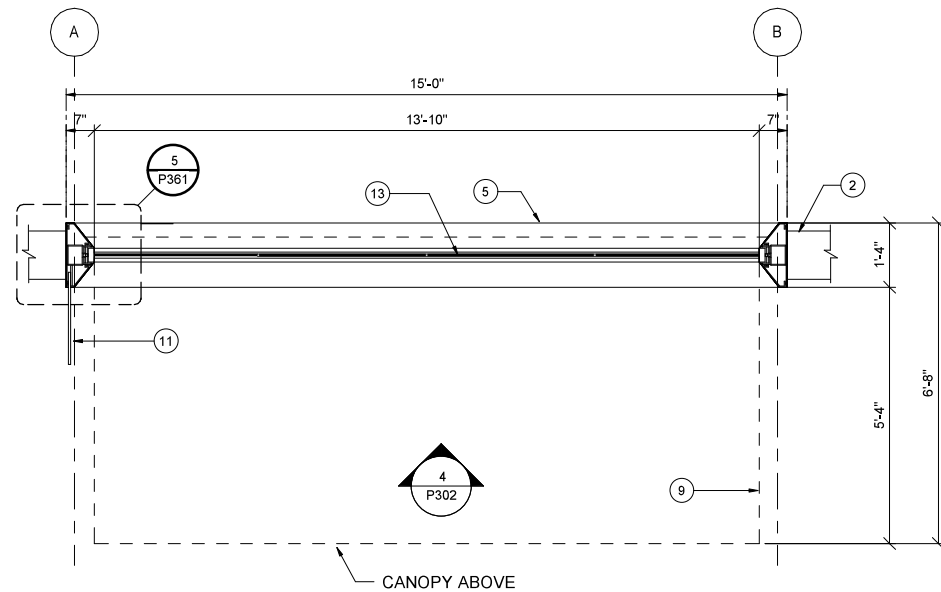
4
P302



"TYPE A" SHELTER ROOF PLAN

1/2" = 1'-0"

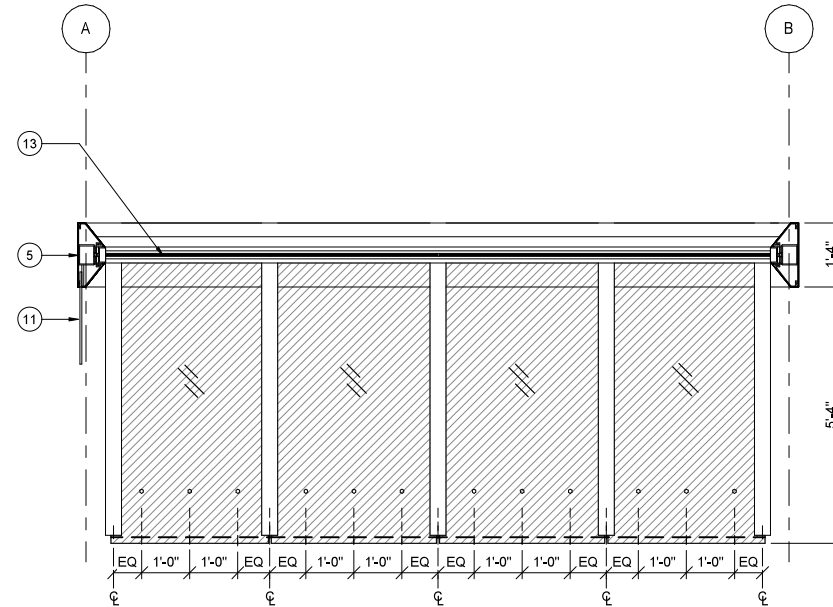
2
P302



"TYPE A" SHELTER FLOOR PLAN

1/2" = 1'-0"

3
P302



"TYPE A" SHELTER REFLECTED CEILING PLAN

1/2" = 1'-0"

1
P302

CONSTRUCTION NOTES

KEYNOTES

- 1 RECESSED CONTINUOUS LED LIGHT FIXTURE. SEE LIGHTING
- 2 CAST-IN-PLACE CONCRETE
- 3 HSS POST SEE STRUCTURAL
- 4 DRAIN PIPE
- 5 FRAME TYPE 1
- 6 GLASS TYPE 2
- 7 HSS BEAM
- 8 BENCH, SEE 1P362
- 9 CANOPY
- 11 WIND SCREEN, GLASS TYPE 1
- 12 FRAME TYPE 2
- 13 GLASS TYPE 1
- 16 GUTTER
- 17 CONTINUOUS EXTERIOR RATED LED LIGHT FIXTURE MOUNTED TO STRUCTURAL SUPPORT TO ILLUMINATE BACK OF GLASS PANEL
- 18 PANEL HARDWARE SYSTEM
- 19 GLASS TYPE 3
- 20 WT SEE STRUCTURAL
- 21 ALUMINUM SHEET

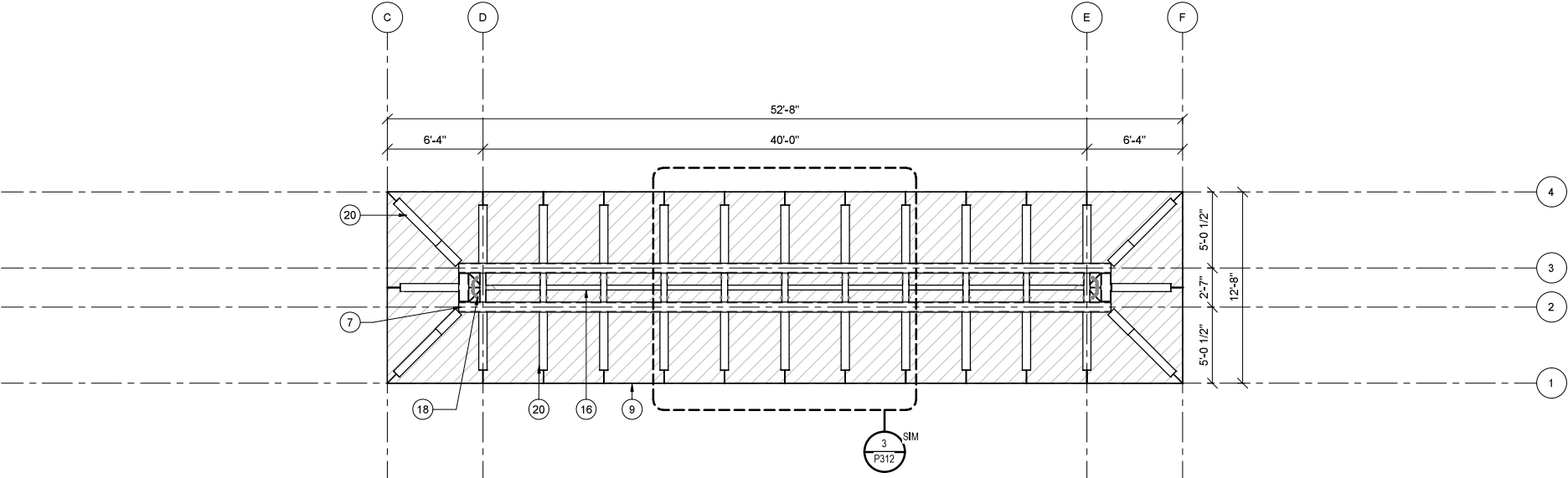
LEGEND

-  POLYCARBONATE ROOF PANEL

GENERAL NOTES

1. FOR PLATFORM LOCATION AND DIMENSIONS SEE CIVIL.
2. FOR STRUCTURAL PLATFORM IMPROVEMENTS SEE STRUCTURAL.

REV	DATE	DESCRIPTION	DESIGNED BY	MM		 JOHN S. RICKERT-ARCHITECT LICENSE NO. A-7020 12-23-2022	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": AS SHOWN FILENAME:		
			CHECKED BY	BB			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		CONTRACT NO.: CONTRACT NO. *** VOLUME:		
			DRAWN BY	TA						DRAWING NO.: SHEET NO.:		
			CHECKED BY	TR						P302 180		
			APPROVED BY	NKS								
PLOT DATE: 12/21/2022			7:55:04 PM		DATE	12-23-2022	"TYPE A" SHELTER PLANS AND ELEVATIONS					

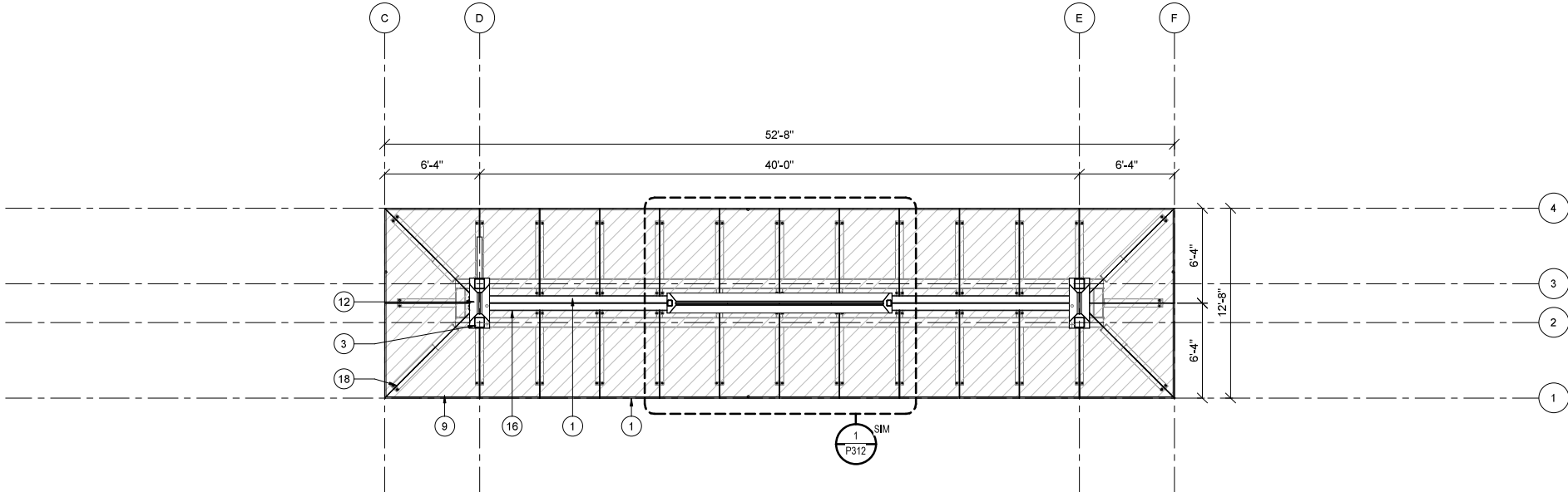


"TYPE B" SHELTER ROOF PLAN - ADD ALTERNATE

3/16" = 1'-0"

2

P311



"TYPE B" SHELTER REFLECTED CEILING PLAN - ADD ALTERNATE

3/16" = 1'-0"

1

P311

CONSTRUCTION NOTES

- KEYNOTES
- 1 RECESSED CONTINUOUS LED LIGHT FIXTURE. SEE LIGHTING
 - 2 CAST-IN-PLACE CONCRETE
 - 3 HSS POST SEE STRUCTURAL
 - 4 DRAIN PIPE
 - 5 FRAME TYPE 1
 - 6 GLASS TYPE 2
 - 7 HSS BEAM
 - 8 BENCH, SEE 1P362
 - 9 CANOPY
 - 11 WIND SCREEN, GLASS TYPE 1
 - 12 FRAME TYPE 2
 - 13 GLASS TYPE 1
 - 16 GUTTER
 - 17 CONTINUOUS EXTERIOR RATED LED LIGHT FIXTURE MOUNTED TO STRUCTURAL SUPPORT TO ILLUMINATE BACK OF GLASS PANEL
 - 18 PANEL HARDWARE SYSTEM
 - 19 GLASS TYPE 3
 - 20 WT SEE STRUCTURAL
 - 21 ALUMINUM SHEET

LEGEND

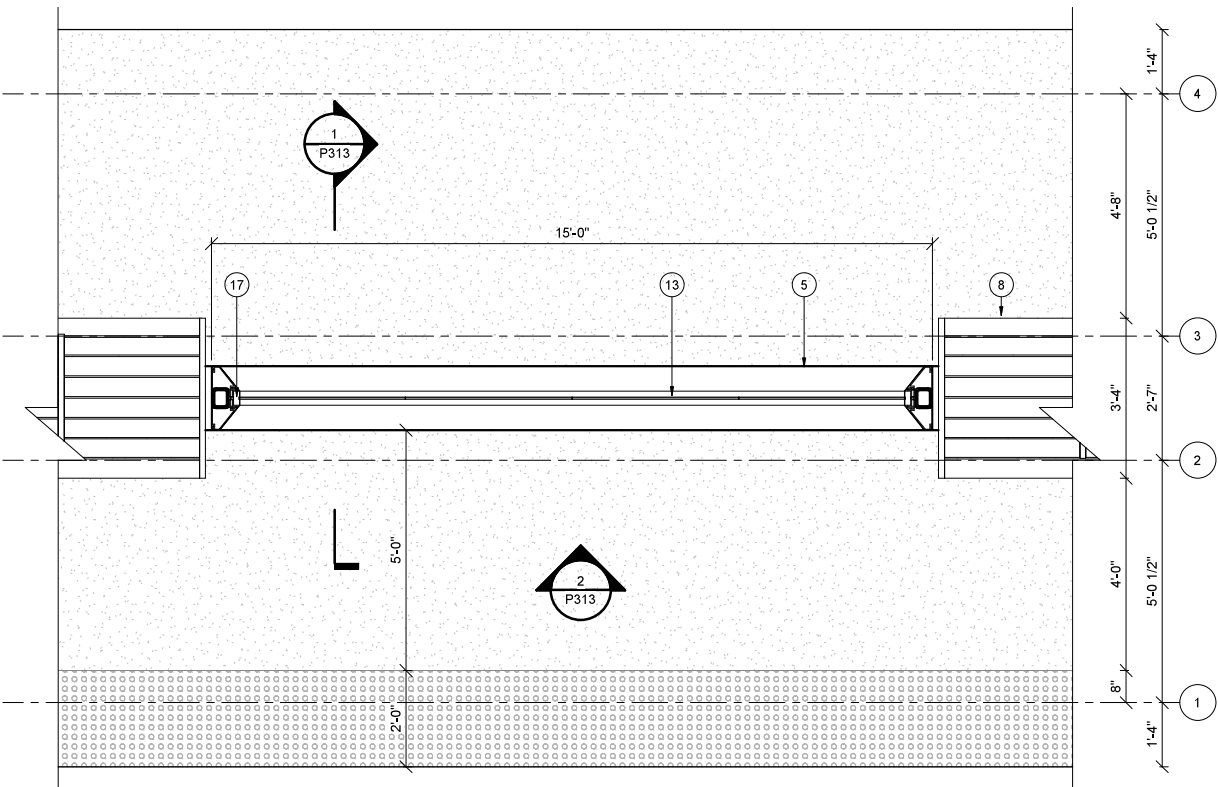
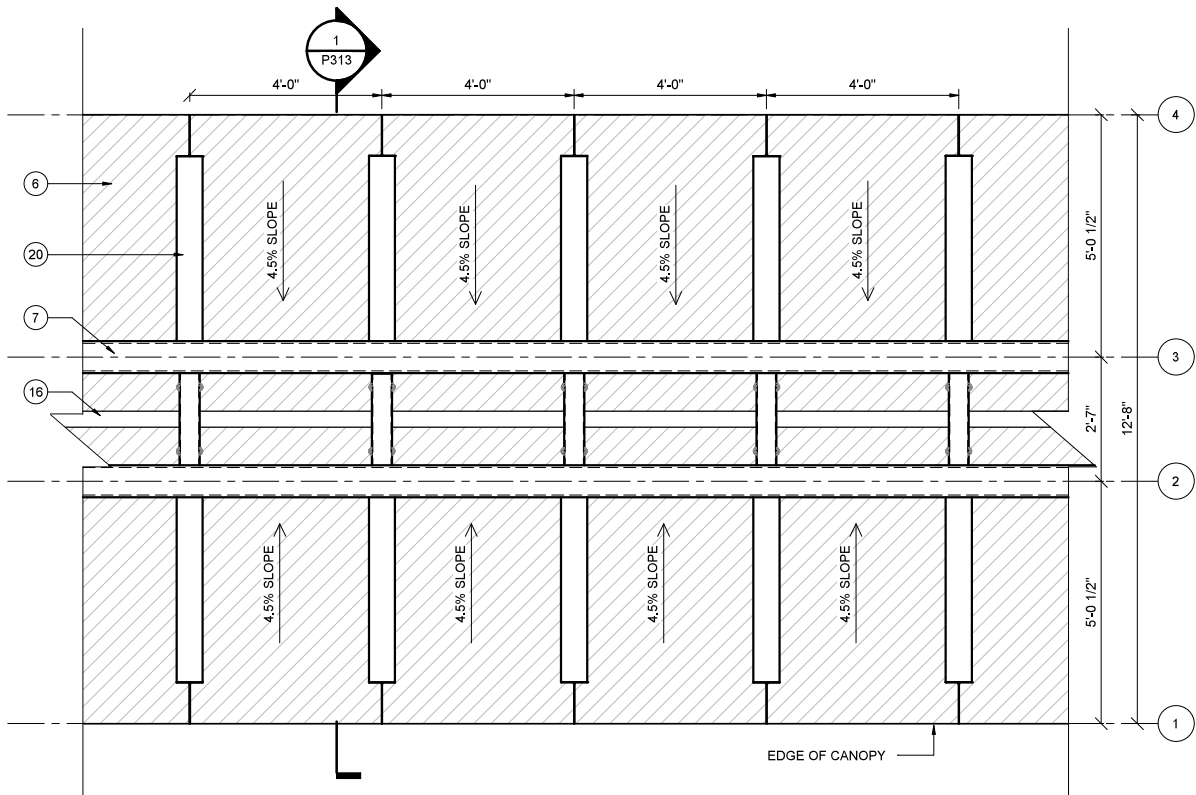
-  POLYCARBONATE ROOF PANEL

GENERAL NOTES

- 1. FOR PLATFORM LOCATION AND DIMENSIONS SEE CIVIL.
- 2. FOR STRUCTURAL PLATFORM IMPROVEMENTS SEE STRUCTURAL.



REV	DATE	DESCRIPTION	DESIGNED BY	MM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": AS SHOWN FILENAME:	CONTRACT NO.: CONTRACT NO. *** VOLUME:	DRAWING NO.: P311	SHEET NO.: 182	
			CHECKED BY	BB										
			DRAWN BY	TA										
			CHECKED BY	TR										
			APPROVED BY	NKS										
PLOT DATE: 12/21/2022			7:55:09 PM		DATE		12-23-2022							
							10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		"TYPE B" SHELTER SHELTER ROOF PLAN AND RCP					
							NOT FOR CONSTRUCTION							



"TYPE B" SHELTER ENLARGED ROOF PLAN - ADD ALTERNATE

1/2" = 1'-0"

3

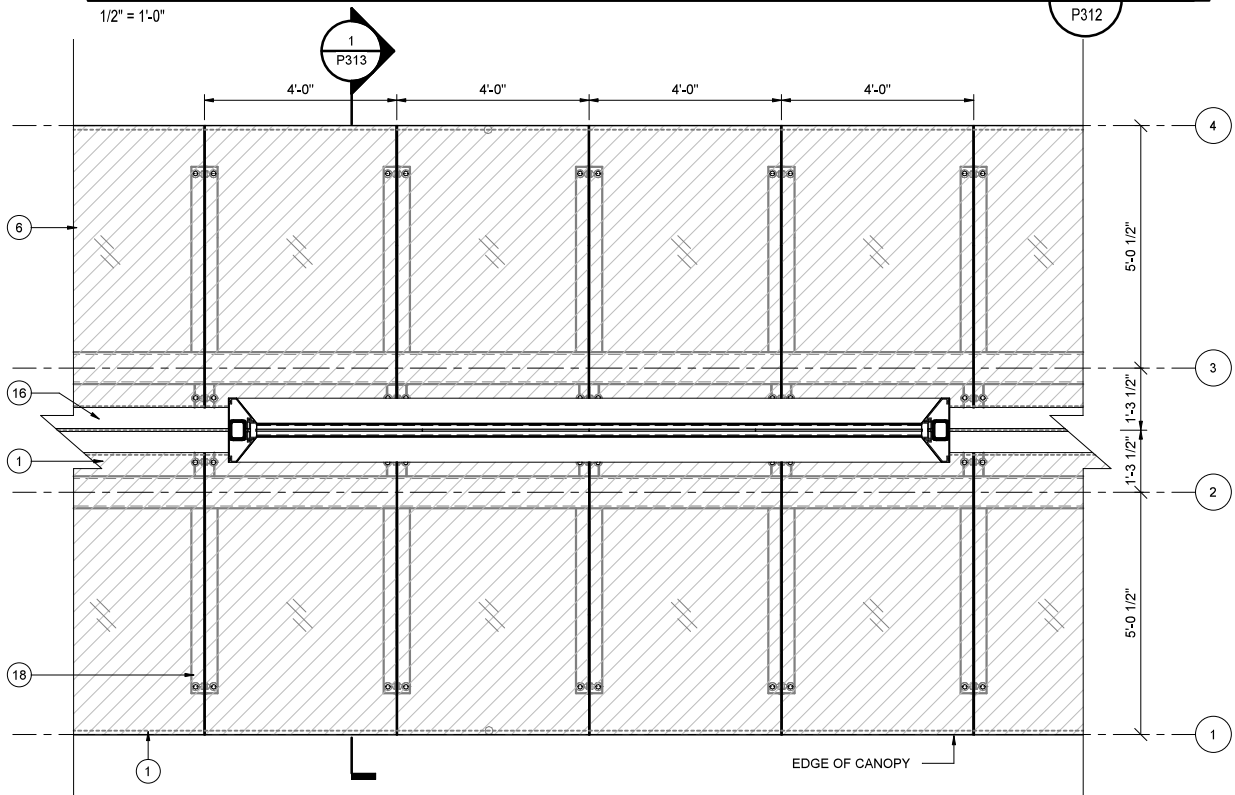
P312

"TYPE B" SHELTER ENLARGED FLOOR PLAN

1/2" = 1'-0"

2

P312



"TYPE B" SHELTER ENLARGED RCP - ADD ALTERNATE

1/2" = 1'-0"

1

P312

CONSTRUCTION NOTES

KEYNOTES

- 1 RECESSED CONTINUOUS LED LIGHT FIXTURE. SEE LIGHTING
- 2 CAST-IN-PLACE CONCRETE
- 3 HSS POST SEE STRUCTURAL
- 4 DRAIN PIPE
- 5 FRAME TYPE 1
- 6 GLASS TYPE 2
- 7 HSS BEAM
- 8 BENCH, SEE 1P362
- 9 CANOPY
- 11 WIND SCREEN, GLASS TYPE 1
- 12 FRAME TYPE 2
- 13 GLASS TYPE 1
- 16 GUTTER
- 17 CONTINUOUS EXTERIOR RATED LED LIGHT FIXTURE MOUNTED TO STRUCTURAL SUPPORT TO ILLUMINATE BACK OF GLASS PANEL
- 18 PANEL HARDWARE SYSTEM
- 19 GLASS TYPE 3
- 20 WT SEE STRUCTURAL
- 21 ALUMINUM SHEET

LEGEND

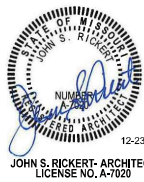
-  DETECTABLE WARNING TILE
-  PLATFORM
-  POLYCARBONATE ROOF PANEL

GENERAL NOTES

1. FOR PLATFORM LOCATION AND DIMENSIONS SEE CIVIL.
2. FOR STRUCTURAL PLATFORM IMPROVEMENTS SEE STRUCTURAL.



REV	DATE	DESCRIPTION	DESIGNED BY	MM
			CHECKED BY	BB
			DRAWN BY	TA
			CHECKED BY	TR
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12-23-2022



ISSUED FOR BID

DATE: 12-23-2022

HDR
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

"TYPE B" SHELTER
ENLARGED PLAN

SCALE FOR 22"x34": AS SHOWN FILENAME:	
CONTRACT NO.: CONTRACT NO. *** VOLUME:	
DRAWING NO.:	SHEET NO.:
P312	183

CONSTRUCTION NOTES

KEYNOTES

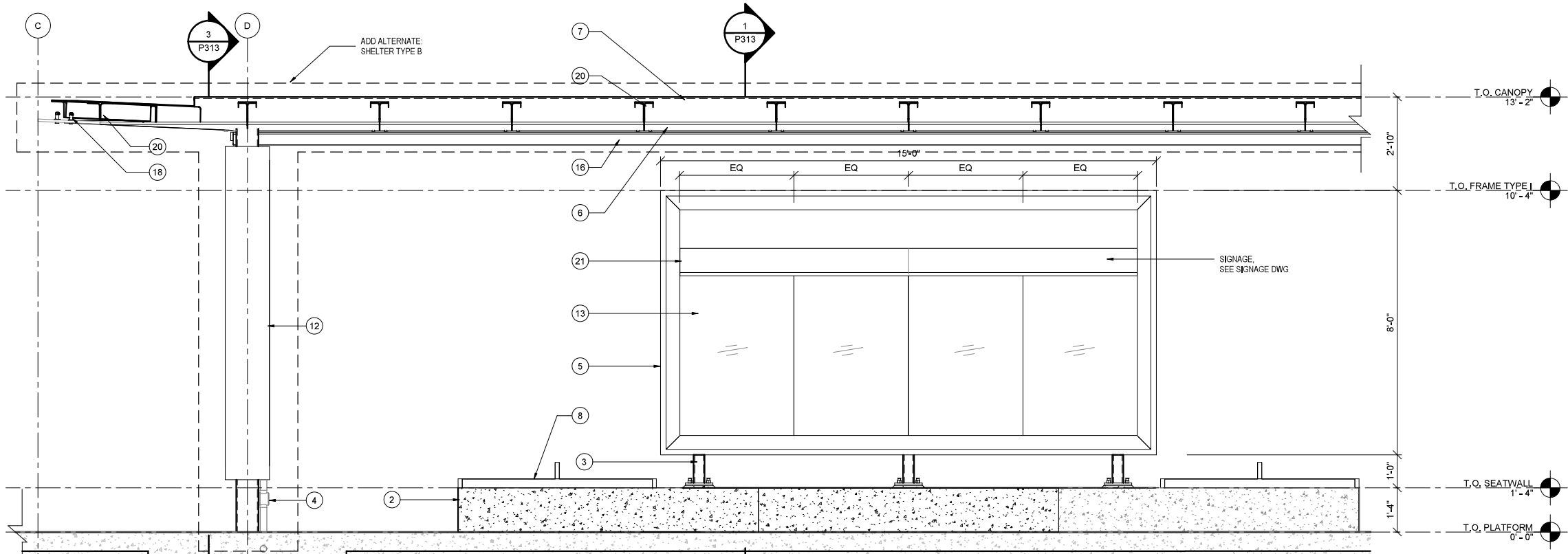
- 1 RECESSED CONTINUOUS LED LIGHT FIXTURE. SEE LIGHTING
- 2 CAST-IN-PLACE CONCRETE
- 3 HSS POST SEE STRUCTURAL
- 4 DRAIN PIPE
- 5 FRAME TYPE 1
- 6 GLASS TYPE 2
- 7 HSS BEAM
- 8 BENCH, SEE 1P362
- 9 CANOPY
- 11 WIND SCREEN, GLASS TYPE 1
- 12 FRAME TYPE 2
- 13 GLASS TYPE 1
- 16 GUTTER
- 17 CONTINUOUS EXTERIOR RATED LED LIGHT FIXTURE MOUNTED TO STRUCTURAL SUPPORT TO ILLUMINATE BACK OF GLASS PANEL
- 18 PANEL HARDWARE SYSTEM
- 19 GLASS TYPE 3
- 20 WT SEE STRUCTURAL
- 21 ALUMINUM SHEET

LEGEND

- WINDSCREEN GLASS TYPE 3

GENERAL NOTES

- 1. FOR PLATFORM LOCATION AND DIMENSIONS SEE CIVIL.
- 2. FOR STRUCTURAL PLATFORM IMPROVEMENTS SEE STRUCTURAL.

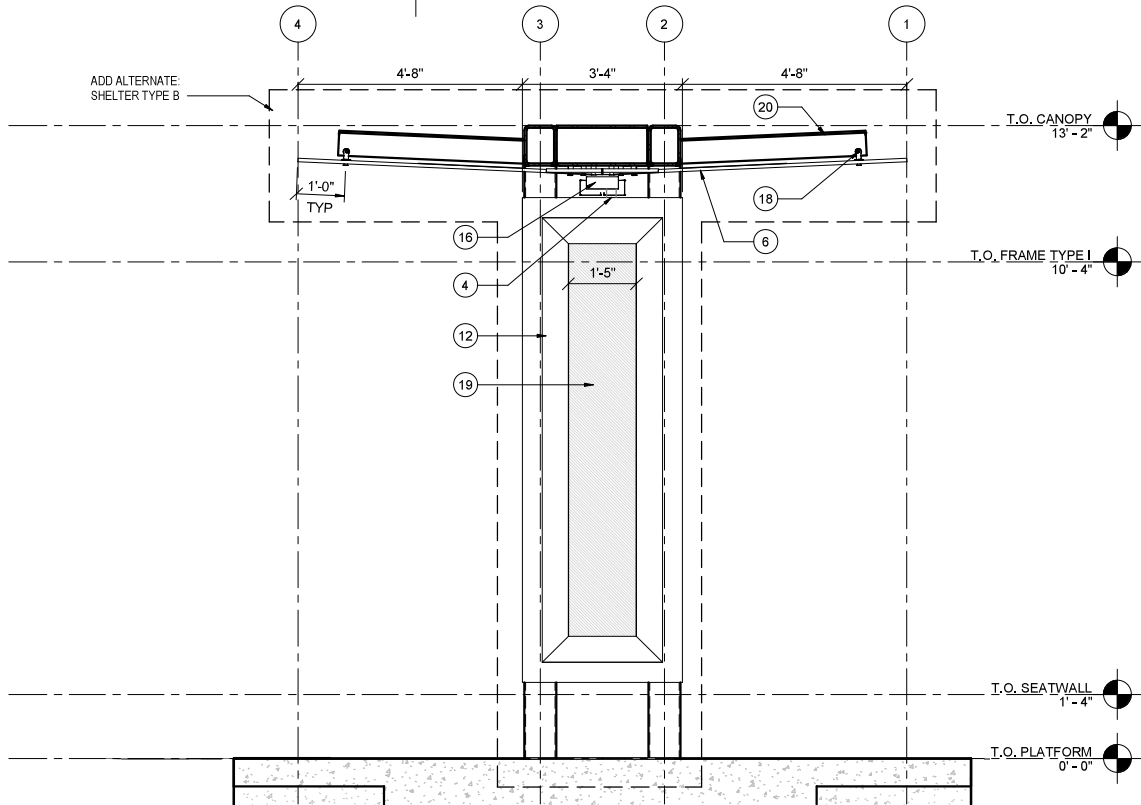


"TYPE B" SHELTER ENLARGED ELEVATION

1/2" = 1'-0"

2

P313

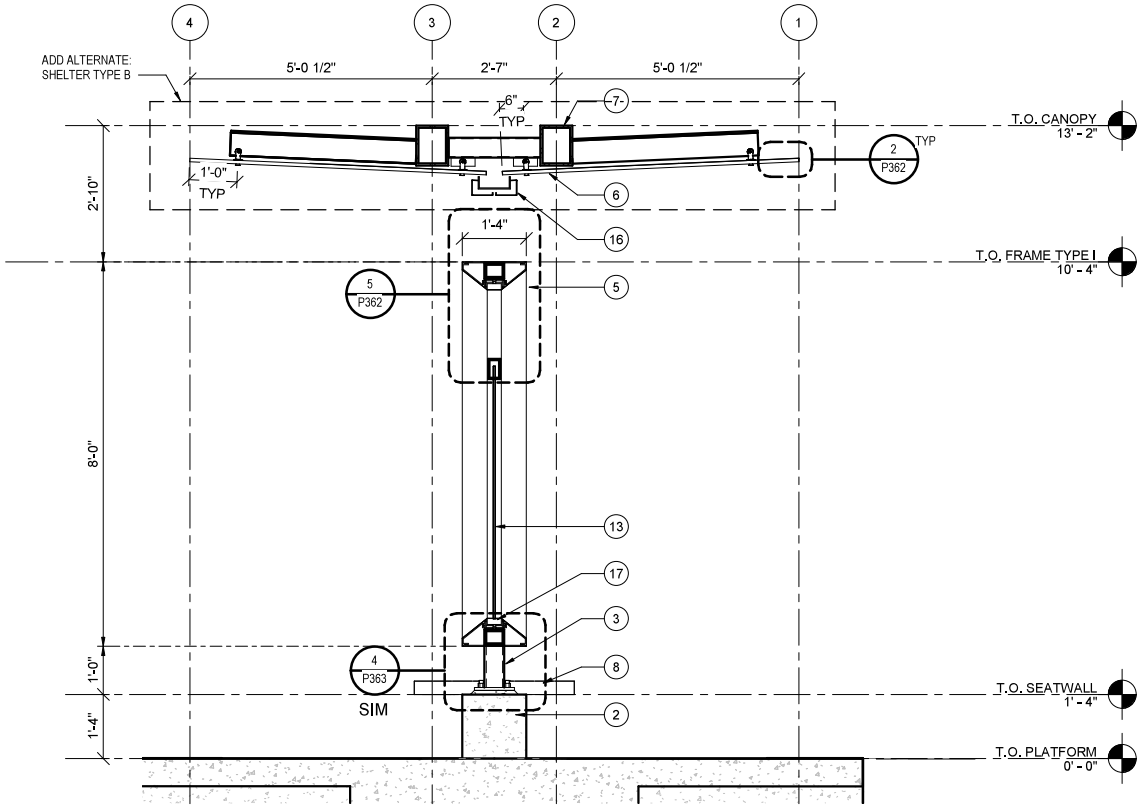


"TYPE B" SHELTER FRAME TYPE II SECTION

1/2" = 1'-0"

3

P313



"TYPE B" SHELTER FRAME SECTION

1/2" = 1'-0"

1

P313

REV	DATE	DESCRIPTION
PLOT DATE: 12/21/2022		7:55:13 PM

DESIGNED BY	MM
CHECKED BY	BB
DRAWN BY	TA
CHECKED BY	TR
APPROVED BY	NKS
DATE	12-23-2022

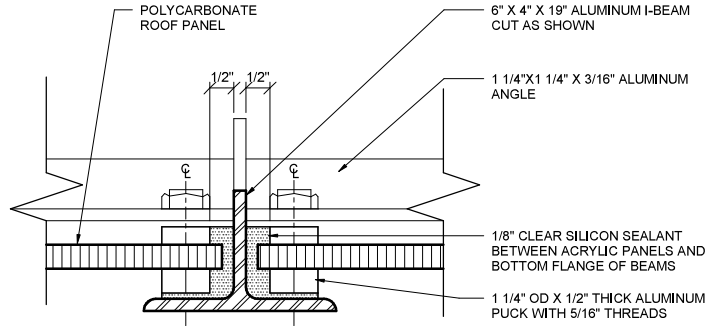


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

"TYPE B" SHELTER
ENLARGED ELEVATION AND SECTION

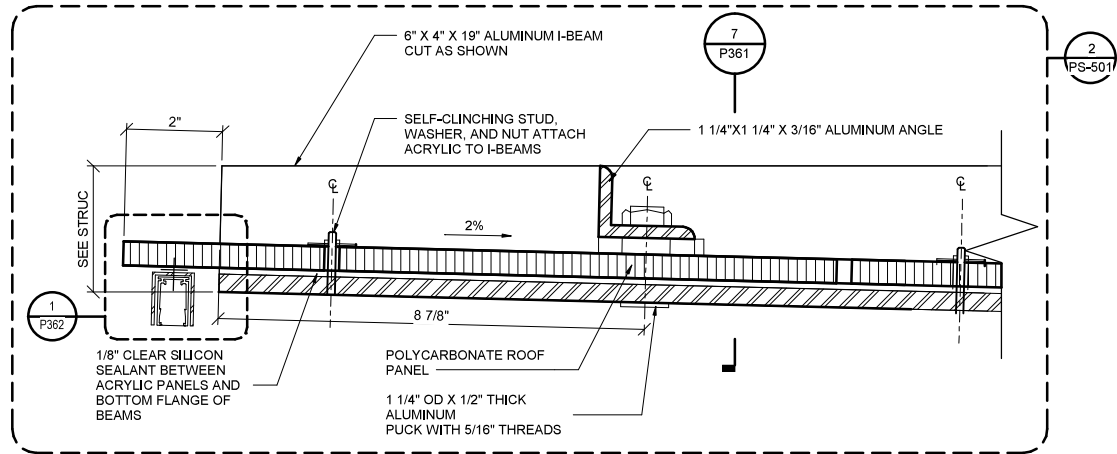
SCALE FOR 22"x34": AS SHOWN FILENAME:	CONTRACT NO.: CONTRACT NO. *** VOLUME:
DRAWING NO.: P313	SHEET NO.: 184



"TYPE A" SHELTER CANOPY ROOF

6" = 1'-0"

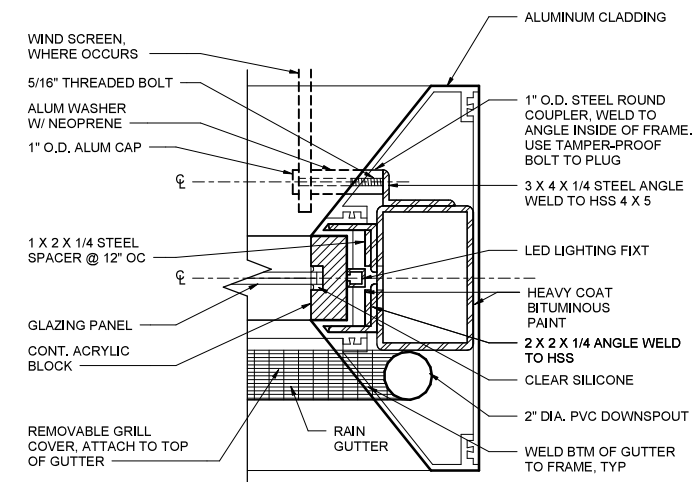
7
P361



"TYPE A" SHELTER CANOPY ROOF

6" = 1'-0"

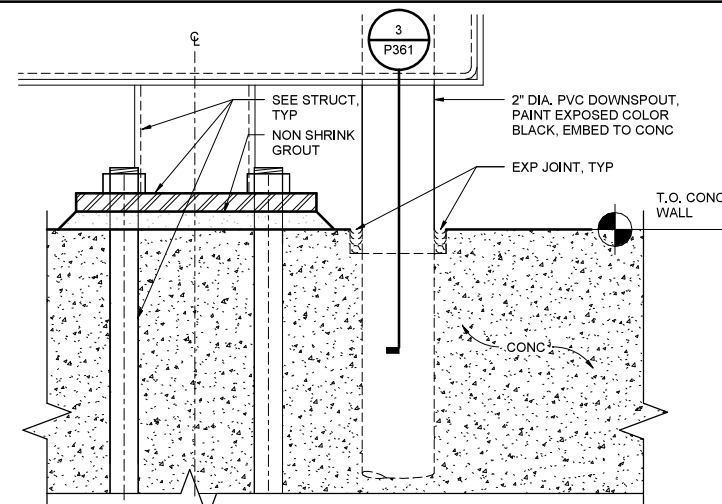
6
P361



PLAN DETAIL

3" = 1'-0"

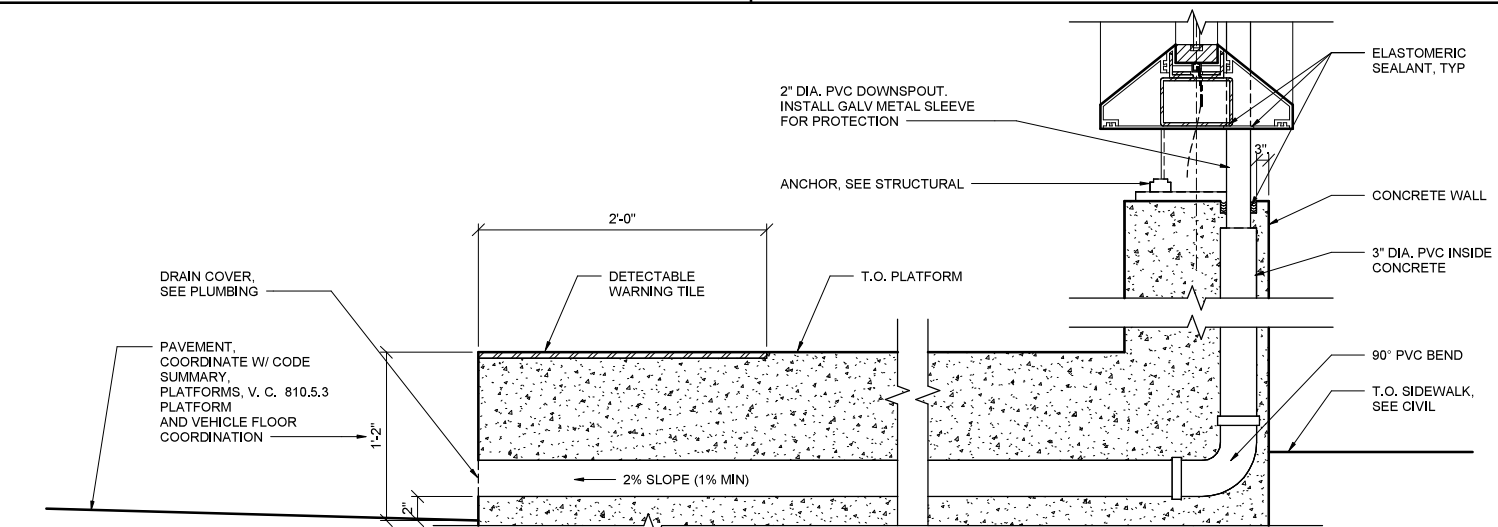
5
P361



"TYPE A" SHELTER BASE SECTION

3" = 1'-0"

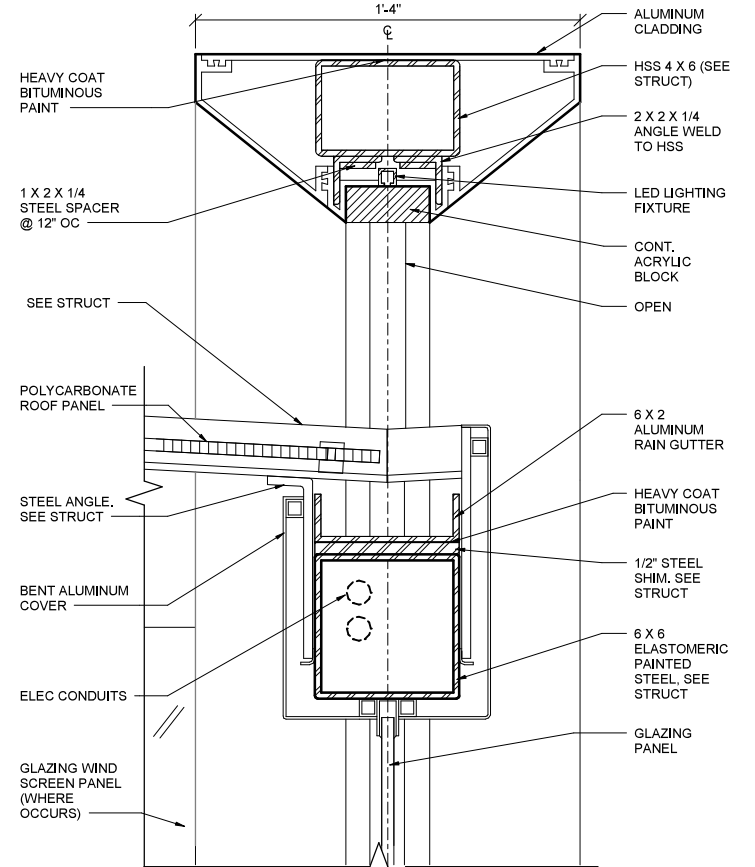
4
P361



"TYPE A" SHELTER PLATFORM DRAIN

1 1/2" = 1'-0"

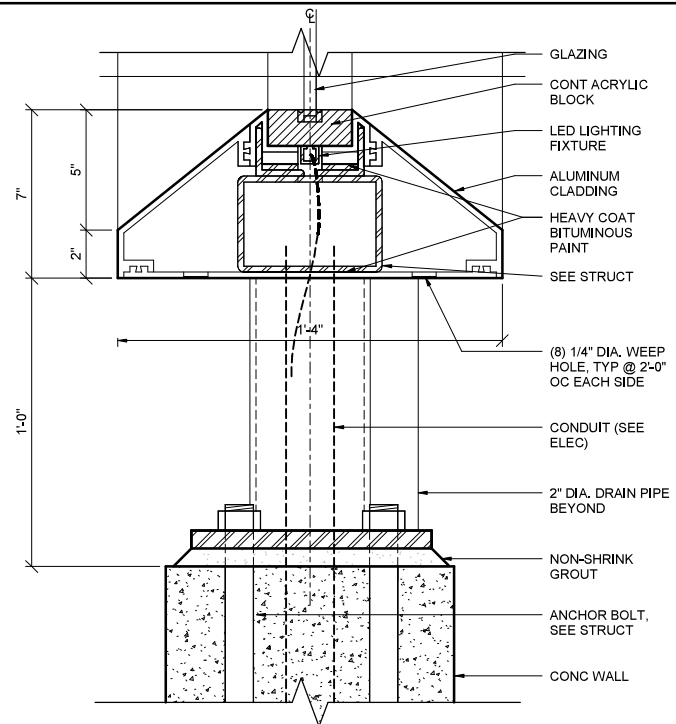
3
P361



"TYPE A" SHELTER HEAD DETAIL

3" = 1'-0"

2
P361



BASE DETAIL

3" = 1'-0"

1
P361

REV	DATE	DESCRIPTION

DESIGNED BY	MM
CHECKED BY	BB
DRAWN BY	TA
CHECKED BY	TR
APPROVED BY	NKS
DATE	12-23-2022

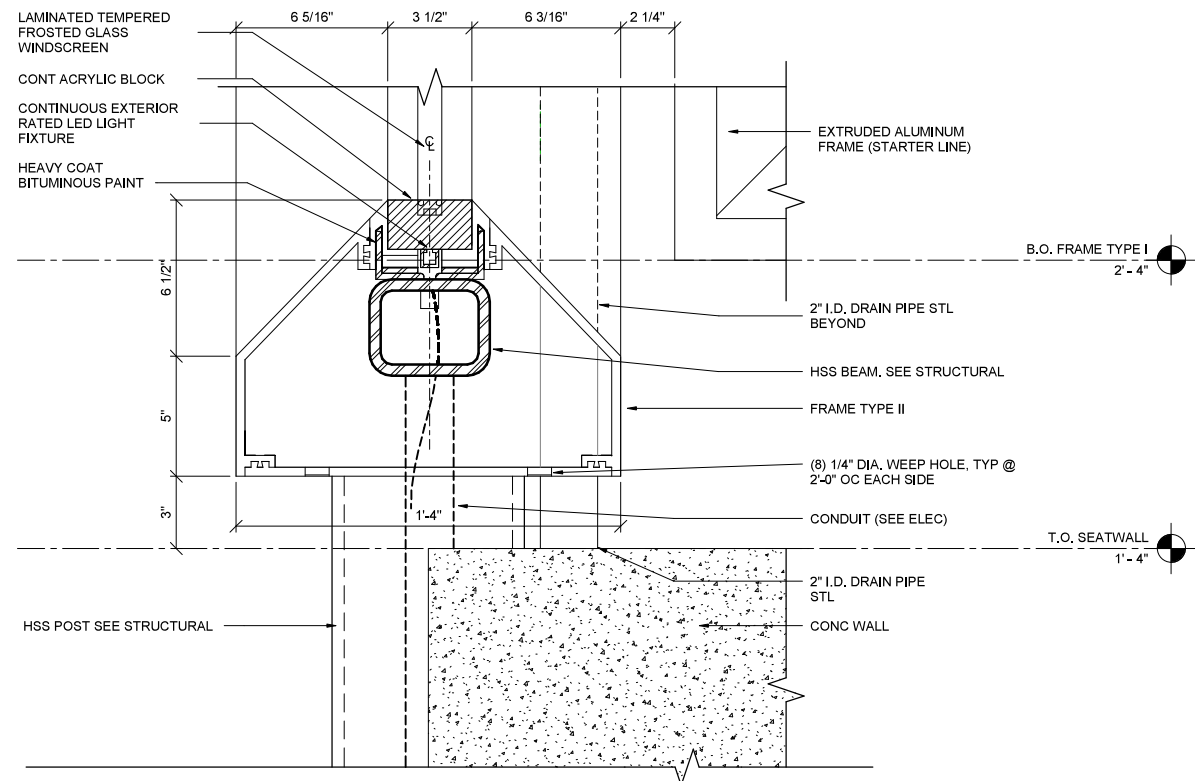


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SHELTER DETAILS

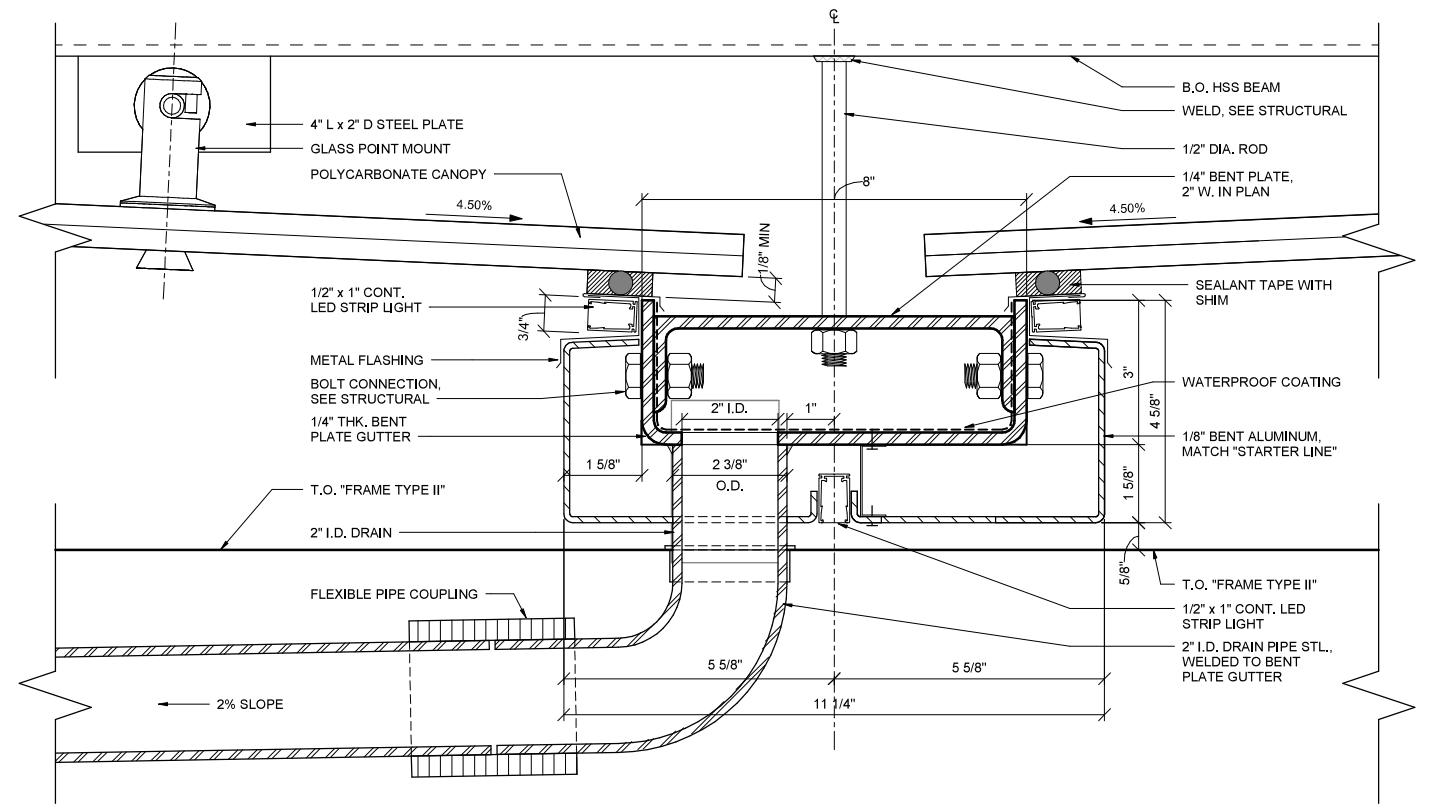
SCALE FOR 22"x34": AS SHOWN FILENAME:	CONTRACT NO.: CONTRACT NO. *** VOLUME:
DRAWING NO.: P361	SHEET NO.: 185



TYPICAL "TYPE B" SHELTER BASE DETAIL

3" = 1'-0"

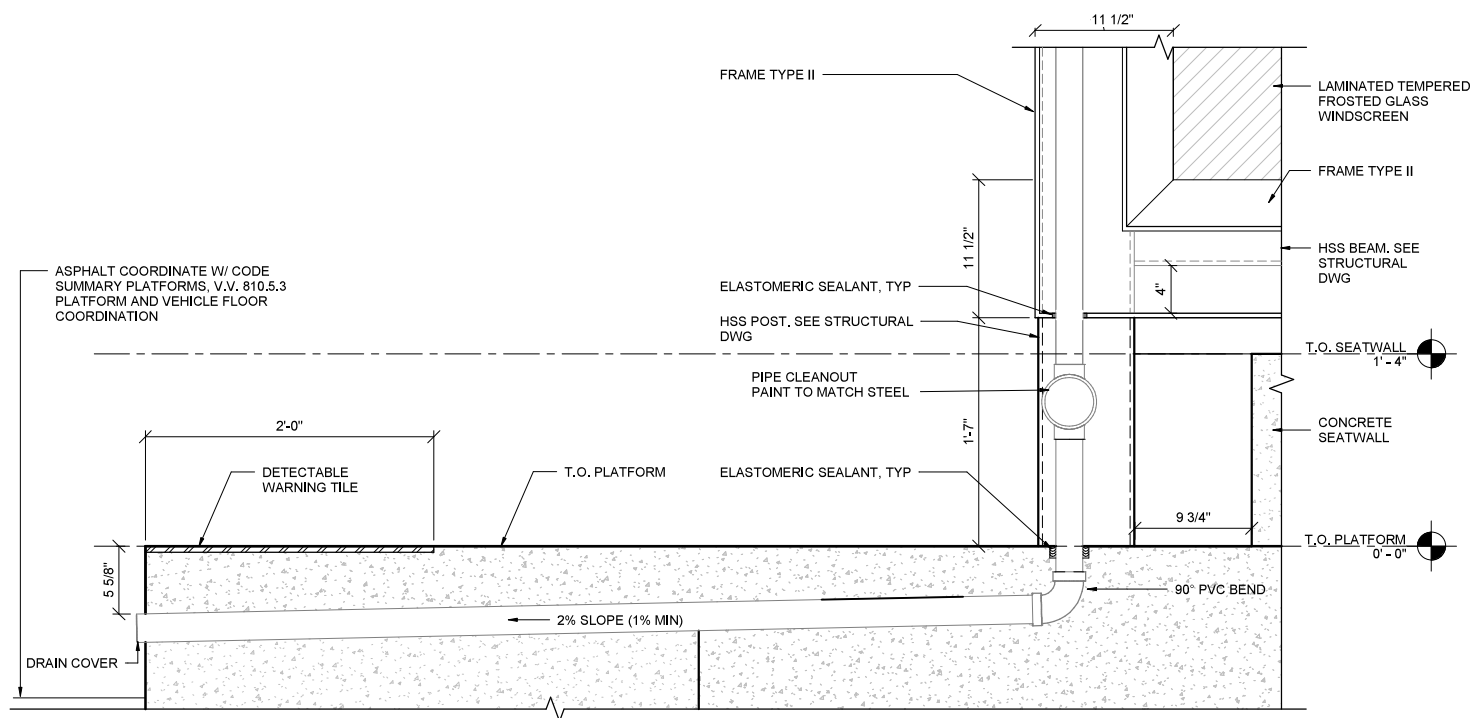
4
P363



TYPICAL "TYPE B" SHELTER GUTTER DETAIL AT DOWNSPOUT

6" = 1'-0"

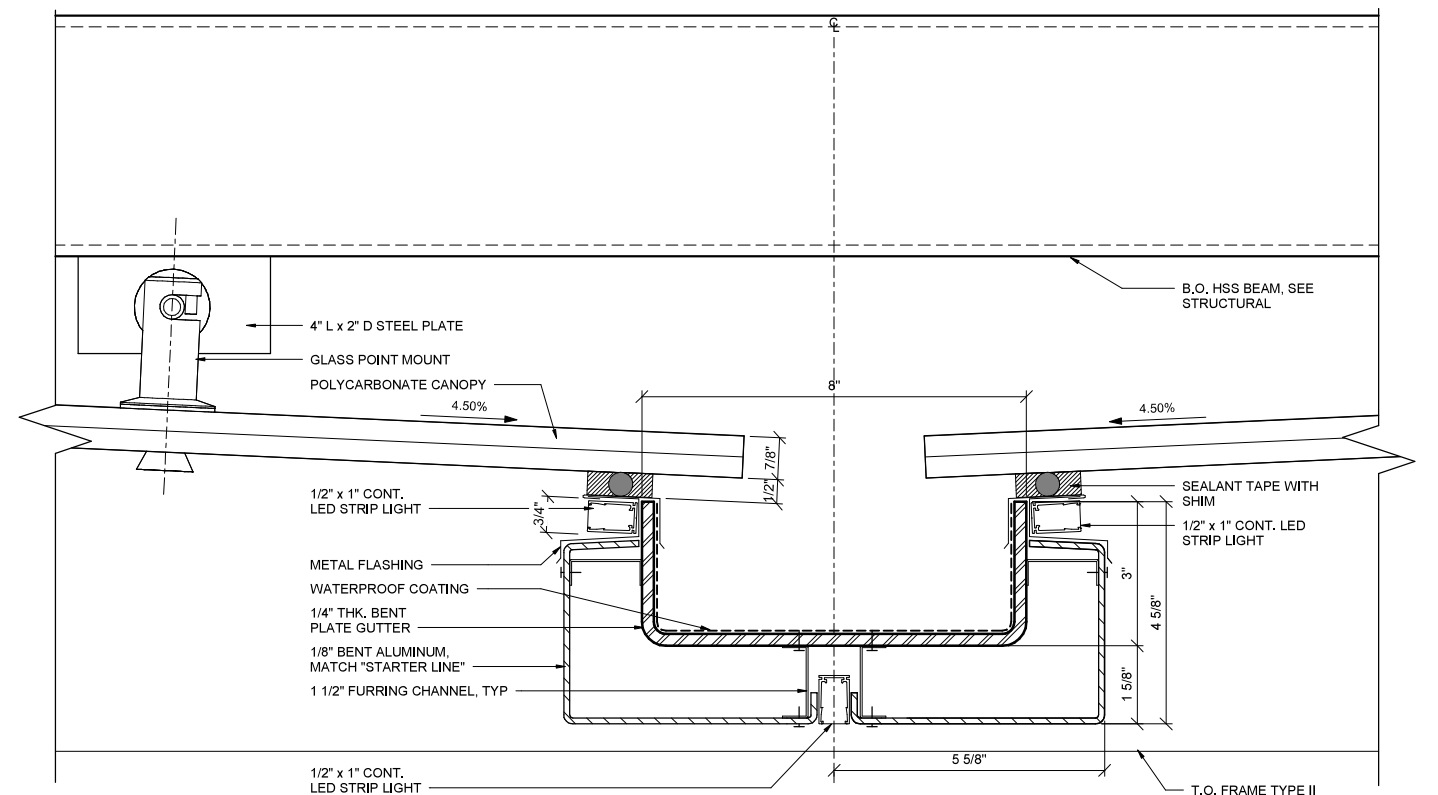
2
P363



TYPICAL "TYPE B" SHELTER PLATFORM DRAIN

1 1/2" = 1'-0"

3
P363



TYPICAL "TYPE B" GUTTER DETAIL

6" = 1'-0"

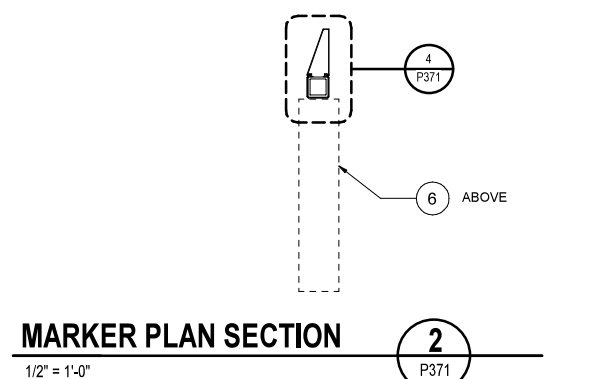
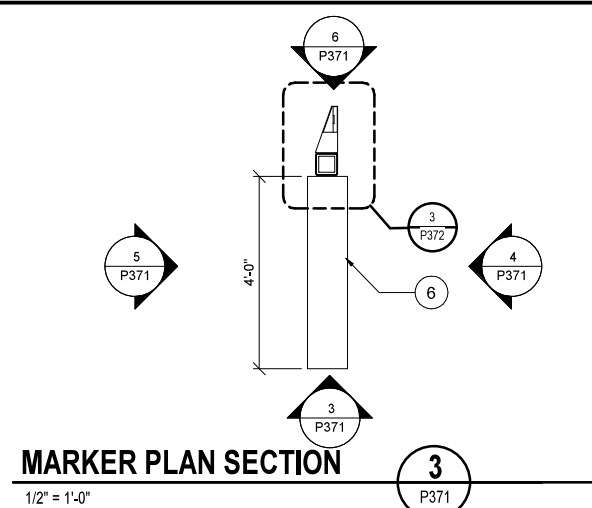
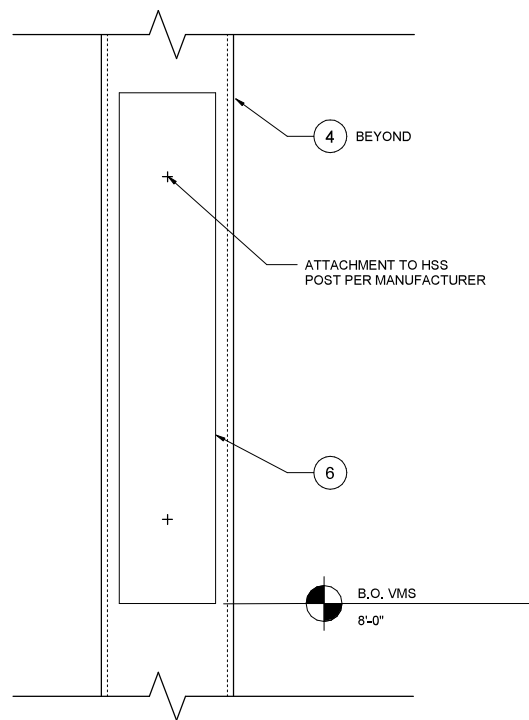
1
P363

REV	DATE	DESCRIPTION	DESIGNED BY	MM
			CHECKED BY	BB
			DRAWN BY	TA
			CHECKED BY	TR
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12-23-2022

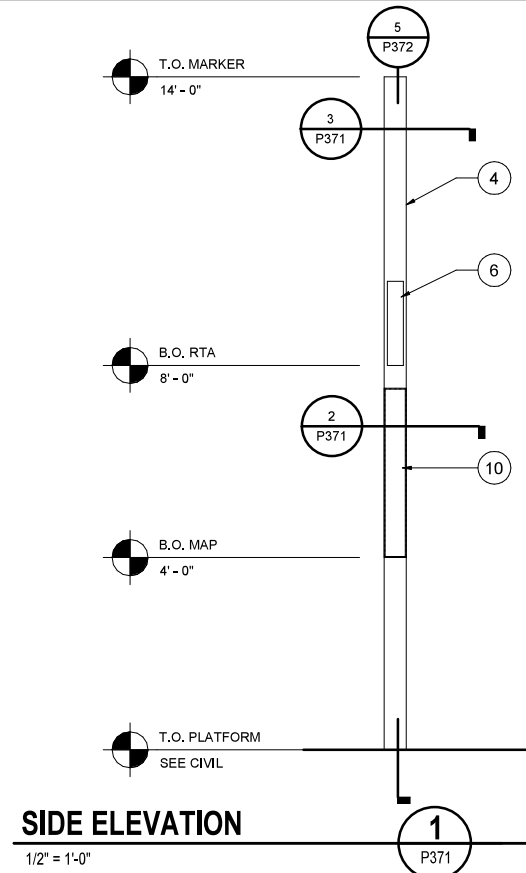
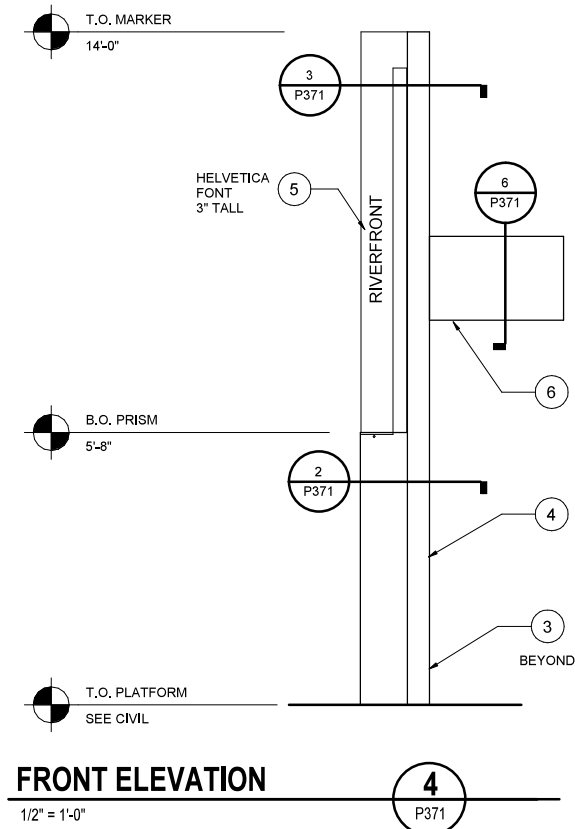
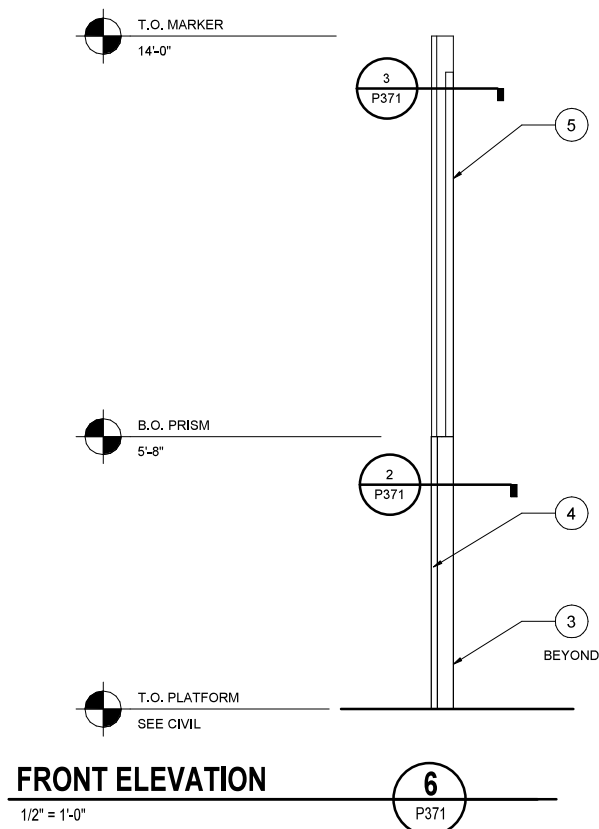
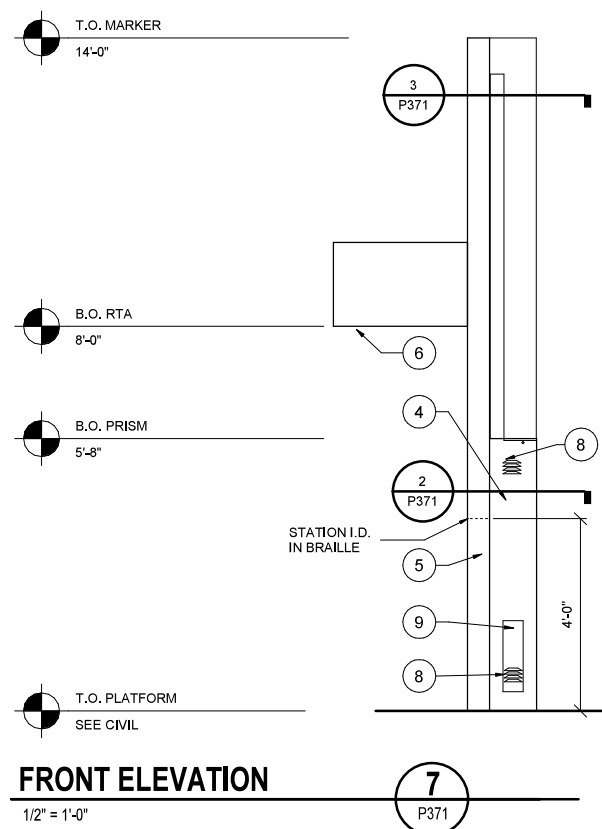


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": AS SHOWN FILENAME:
"TYPE B" SHELTER DETAILS ADD ALTERNATE		CONTRACT NO.: CONTRACT NO. *** VOLUME:
DRAWING NO.: P363	SHEET NO.: 187	



- # CONSTRUCTION NOTES
-
- KEYNOTES
- 3 STEEL COLUMN
 - 4 18 GA PAINTED METAL
 - 5 ACRYLIC PRISM -
COORDINATE FINAL DESIGN
W/ ARCHITECT
 - 6 RTA SIGN
 - 8 VENT
 - 9 ACCESS PANEL
 - 10 1/2" CLEAR ACRYLIC WINDOW
FOR MAP DISPLAY



- ## GENERAL NOTES
1. LCD SCREEN SIZE & TYPE TO BE DETERMINED BY STREETCAR AUTHORITY
 2. FOR NEW MARKER/KIOSK AND RELOCATED MAX SIGN LOCATIONS SEE SHEET P401
 3. FINAL STATION NAMING TO BE DETERMINED BY OWNER
 4. SEE P500 SIGNAGE LOCATION ELEVATIONS

REV	DATE	DESCRIPTION	DESIGNED BY	MM
			CHECKED BY	BB
			DRAWN BY	TA
			CHECKED BY	TR
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			7:55:22 PM	DATE 12-23-2022

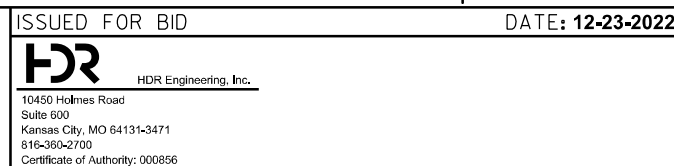
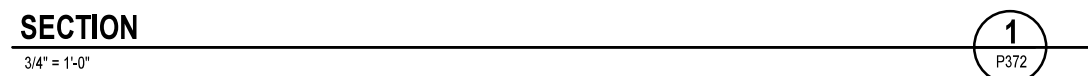
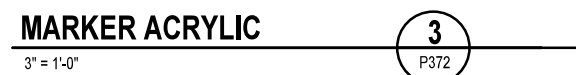
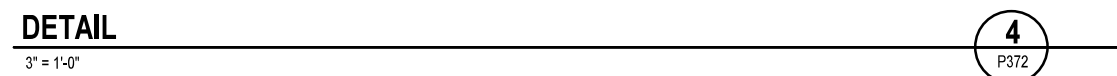
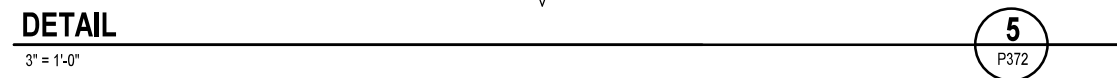


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NOT FOR CONSTRUCTION		

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

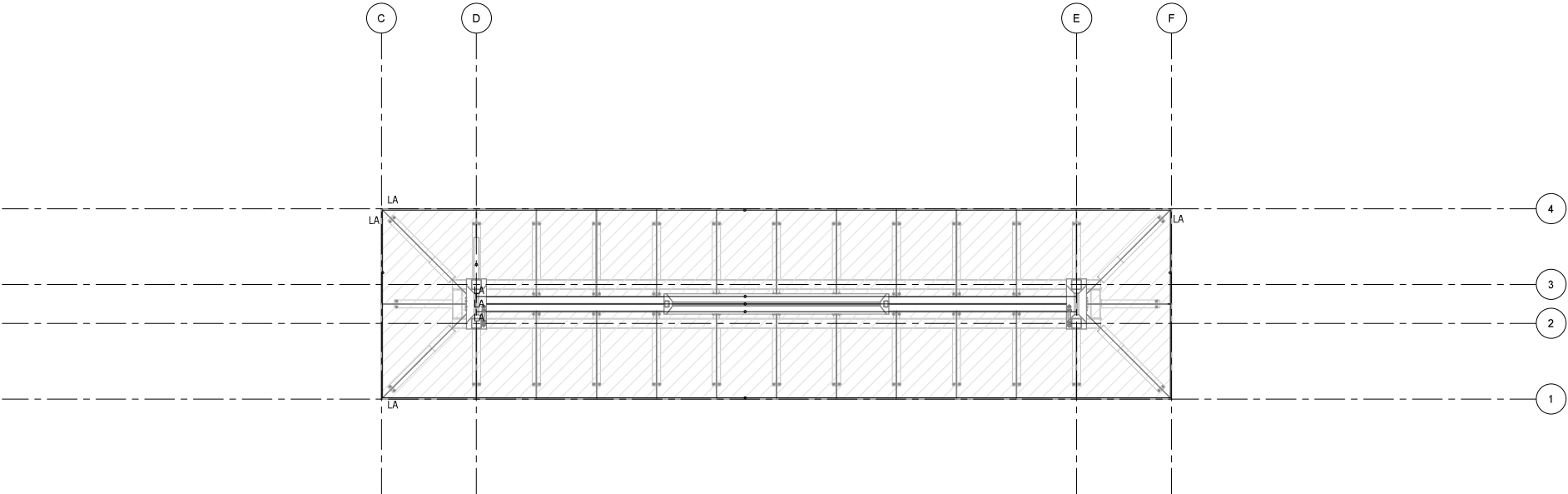
MARKER PLANS AND ELEVATIONS

SCALE FOR 22"x34":	
AS SHOWN	
FILENAME:	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
I	
DRAWING NO.:	SHEET NO.:
P371	188



KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SCALE FOR 22"x34":	
AS SHOWN	
FILENAME:	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
I	
DRAWING NO.:	SHEET NO.:
P372	189



"TYPE B" SHELTER LIGHTING PLAN

3/16" = 1'-0"

1
P380

Lighting Fixture Schedule									
TYPE	DESCRIPTION	MANUFACTURER	MODEL	LAMP	WATTAGE	VOLTAGE	ACCEPTABLE MANUFACTURERS	COMMENTS	
LA	FLEXIBLE DIRECT VIEW LED STRIP WITH NOMINAL 0.88" HIGH BY 0.45" WIDE HOUSING. FIXTURE SHALL BE IMPACT RESISTANT AND RATED MINIMUM IP65 FOR USE IN WET LOCATIONS. USE MOUNTING CLIPS AS RECOMMENDED BY MANUFACTURER.	ACCLAIM	FTB-1-2-5-A-A-E-N	120lm/ft, 4000K LED	3.75 W/ft	277 V	PUREEDGE LED LINEAR		
LB	FLEXIBLE LED TAPE LIGHT, FIELD CUTTABLE DOWN TO 1" LENGTHS. FIXTURE SHALL BE RATED MINIMUM IP65 FOR USE IN WET LOCATIONS. USE MOUNTING CLIPS AS RECOMMENDED BY MANUFACTURER.	ACCLAIM	FLEXOSE-4	200lm/ft, 4000K LED	2.4 W/ft	277 V	PUREEDGE WAC		

REV	DATE	DESCRIPTION	DESIGNED BY MM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": AS SHOWN FILENAME: CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: P380 190
			CHECKED BY BB			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		
			DRAWN BY TA						
			CHECKED BY TR						
			APPROVED BY NKS						
PLOT DATE: 12/21/2022			7:55:26 PM	DATE	12-23-2022	ELECTRICAL LIGHTING PLANS AND FIXTURE SCHEDULE			

GENERAL COMMUNICATION AND ELECTRICAL NOTES

1. ELECTRICAL WORK SHOWN IS DIAGRAMMATIC AND IS MEANT TO REPRESENT GENERAL ROUTING AND EQUIPMENT LOCATIONS. NOT EVERY BEND, OFFSET, PULLBOX, ETC. IS SHOWN. CONTRACTOR SHALL PROVIDE ALL WORK REQUIRED FOR A COMPLETE INSTALLATION.
2. COORDINATE ALL UNDERGROUND SITE WORK WITH EXISTING AND NEW UTILITIES.
3. COORDINATE REMOVAL OF ALL ITEMS WITH SITE PLAN. EXISTING ITEMS ON SITE OUTSIDE THE AREAS OF DEMOLITION ARE TO REMAIN AND BE PROTECTED DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE.
4. CONDUITS CROSSING OTHER UTILITIES SHOULD HAVE A 2 FOOT MINIMUM VERTICAL SEPARATION.
5. ALL CONDUIT ELBOWS SHALL BE 90 DEGREES WITH MINIMUM 36 INCH RADIUS.
6. STREET CROSSINGS ARE TO BE MADE BY BORING AND TRENCHING CONDUIT PERPENDICULAR TO THE STREET BEING CROSSED. COORDINATE BORING LOCATIONS WITH COMMUNICATIONS PLAN WHERE POSSIBLE. TRENCHING OPEN CUT IS ACCEPTABLE WITH STREET RESTORATION.
7. ALL CONDUIT UNDER EXISTING PAVEMENT TO BE BORED OR TRENCHED WITH PAVEMENT RESTORATION.
8. HAVE ALL UTILITIES MARKED BEFORE BORING OR TRENCHING CONDUIT. CONDUIT LOCATION MAY BE ADJUSTED TO AVOID CONFLICTS WITH EXISTING UTILITIES.
9. REPLACE ALL DISTURBED TURF AREAS WITH SOD. MATCH EXISTING SPECIES.
- 10.FOR EVERGY SERVICE CONDUCTORS, CONTRACTOR TO INSTALL CONDUIT WITH TRACER WIRE AND PULL TAPE. EVERGY TO INSTALL CONDUCTORS.
11. CONTRACTOR TO INSTALL METER CAN. EVERGY TO INSTALL METER AND CONNECT SERVICE.
13. SEE DISCIPLINE SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.

PLATFORM NOTES

1. COMMUNICATION CONDUITS TO BE PLACED AT A MINIMUM OF 36” DEPTH. POWER CONDUITS TO BE PLACED AT A MINIMUM OF 48” DEPTH.
2. SEE COMMUNICATIONS DETAILS – SPLICING DIAGRAMS FOR SYSTEM CONNECTIVITY IN Z600 SERIES SHEETS.
3. PROVIDE 15 FEET OF CABLE SLACK OF EACH COMMUNICATIONS TYPE CABLE (CAT6 AND FIBER) IN EACH COMMUNICATION PULL BOX.
4. ALL CONDUITS ARE HOME RUNS FROM PULL BOX TO DEVICE.
5. ALL CONDUITS MAY BE PLACED IN THE SAME TRENCH AS REPRESENTED BY A SINGLE LINE.

EQUIPMENT NOTES

1. SUBMITTALS OF ALL EQUIPMENT MUST BE REVIEWED AND APPROVED PER SPECIFICATIONS.

OCS POLE ATTACHMENT GENERAL NOTES

1. CAMERA TO BE INSTALLED ON THE OCS POLE SIDE FACING THE STREETCAR STATION AREA.
2. OCS POLE DETAILS, POLE LENGTH, AND FOUNDATION SCHEDULE SHOWN ON DRAWINGS Y111 TO Y112.
3. FOR TYPICAL POLE DETAILS, SEE DRAWINGS Y021 TO Y023.
4. FOR POLE FOUNDATION DETAILS, SEE DRAWINGS Y031 TO Y039.
5. POLE SURFACES WITH HOLES DRILLED FOR CAMERA CABLING SHALL BE TREATED WITH COLD ZINC PAINT TO INHIBIT RUST.

ELECTRICAL AND COMMUNICATION LEGEND / NOTES

1. SEE DRAWINGS P101& P102 FOR PLATFORM LAYOUT INFORMATION.

2. SEE DRAWINGS C201 & C202 FOR STREETCAR STOP DIMENSIONS.

3. FIBER OPTIC SPLICE VAULT AND FIBER OPTIC DUCTBANK CONDUIT DESIGN SHOWN IN Z100 SERIES OF VOLUME 2.
- UT

UE

ITS
- ⌀ TRACK

342 ITS CABINET AND COMBINATION METER SERVICE ENTRANCE PANELBOARD

ELECTRICAL PULLBOX PER Z603

COMMUNICATION PULLBOX

ITS COMMUNICATION UNDERGROUND CONDUIT

ELECTRICAL UNDERGROUND CONDUIT

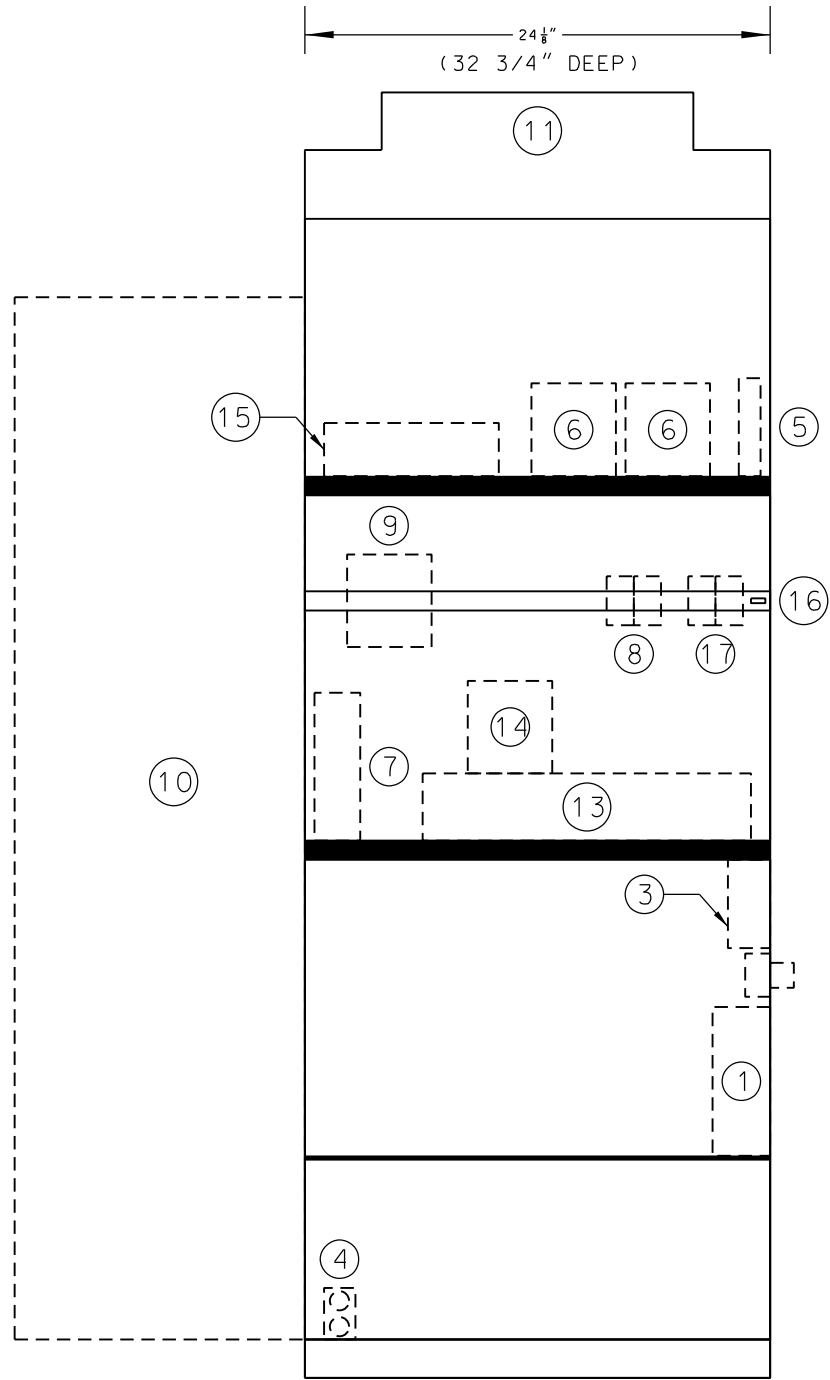
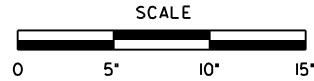
EVERGY UNDERGROUND ELECTRICAL CONDUIT

EVERGY SERVICE PEDESTAL

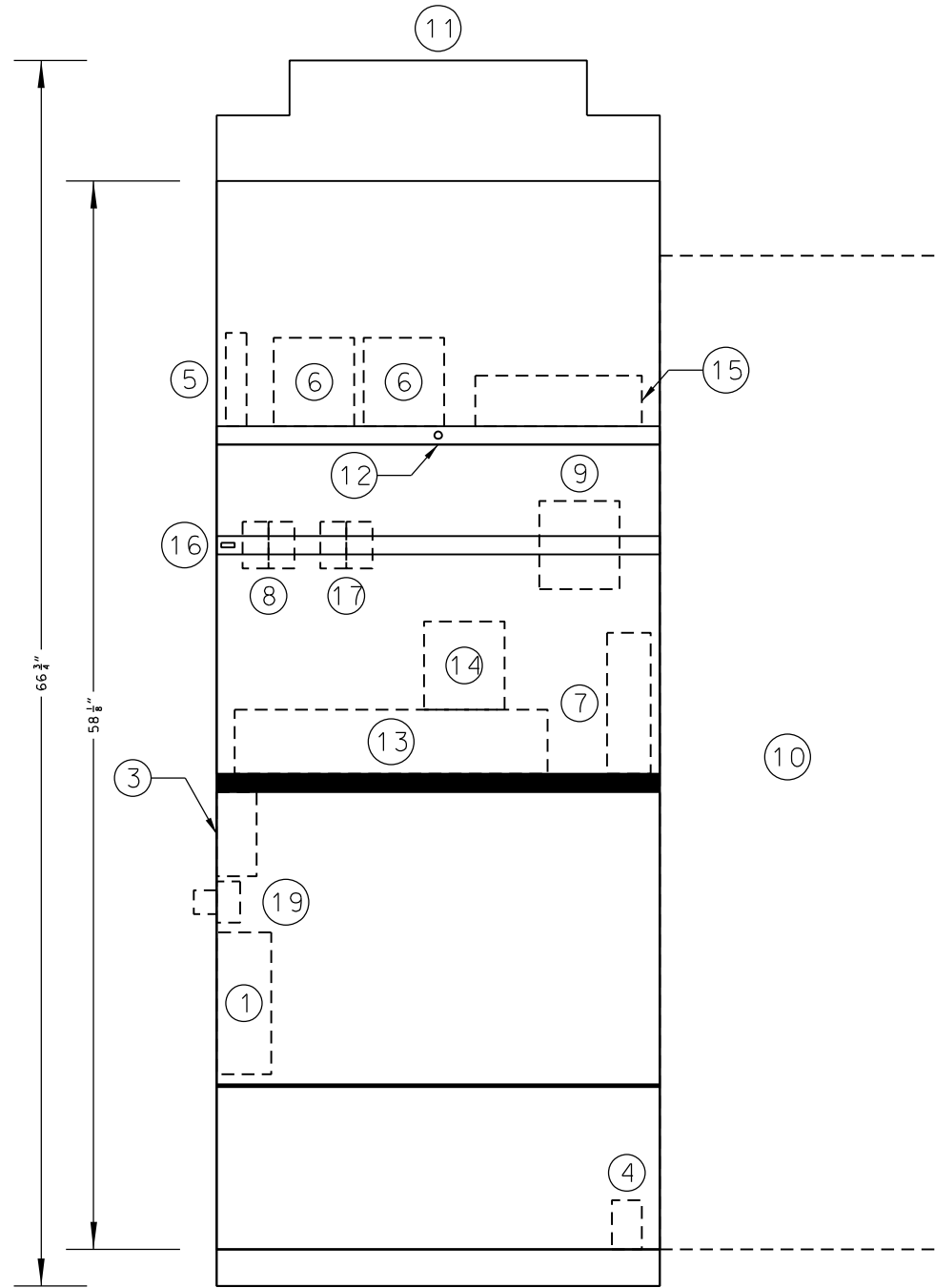
FIBER OPTIC SPLICE VAULT

STATION PTZ CAMERA

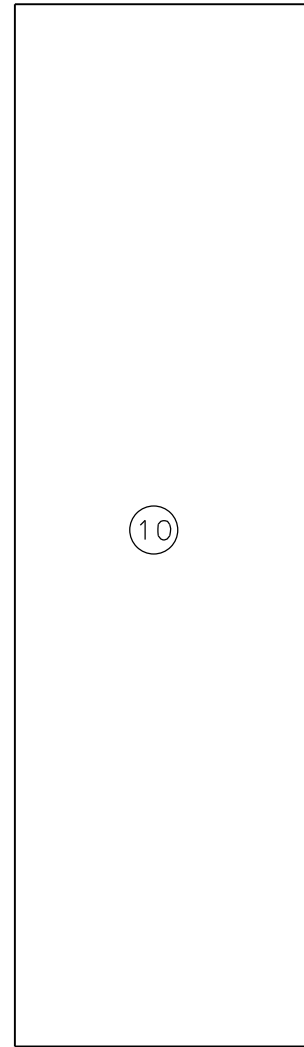
REV	DATE	DESCRIPTION	DESIGNED BY	JCM		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME:	
			CHECKED BY	NWW		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		CONTRACT NO.:	
			DRAWN BY	MMQ					CONTRACT NO. ***	
			CHECKED BY	NWW					VOLUME:	
			APPROVED BY	NKS					DRAWING NO.:	SHEET NO.:
									P401	191
PLOT DATE: 12/22/2022			4:57:18 PM		DATE	12-23-2022	PLATFORM ITS AND ELECTRICAL GENERAL NOTES			



1 342 ITS CABINET - BACK VIEW
NTS



2 342 ITS CABINET - FRONT VIEW
NTS



3 SERVICE METER CABINET
NTS

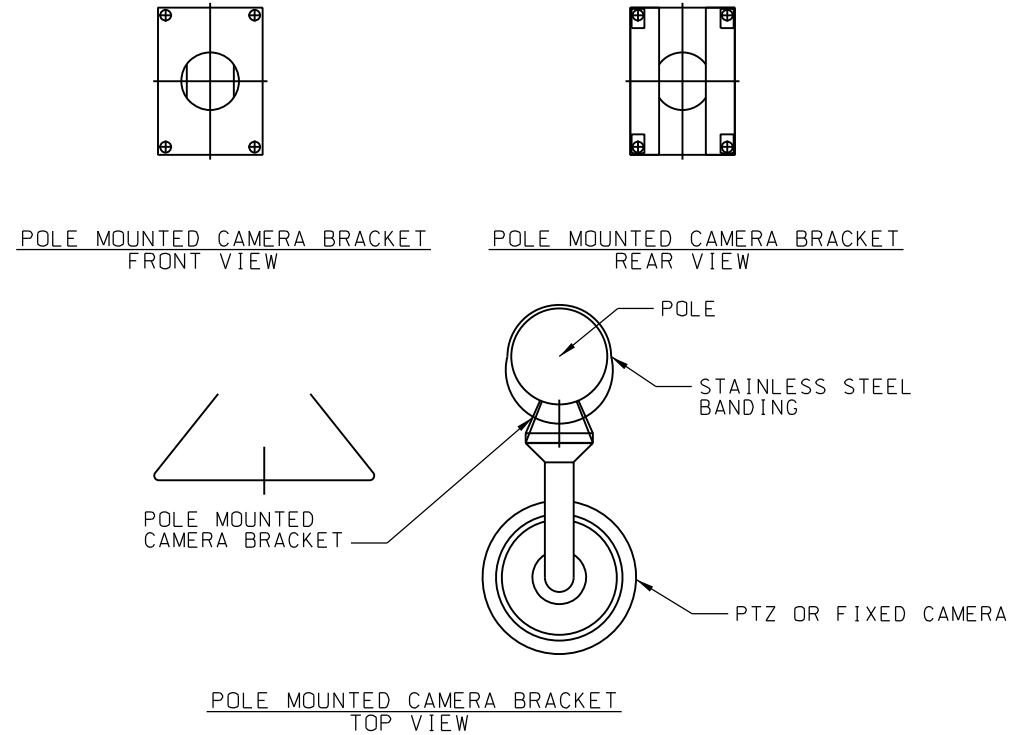
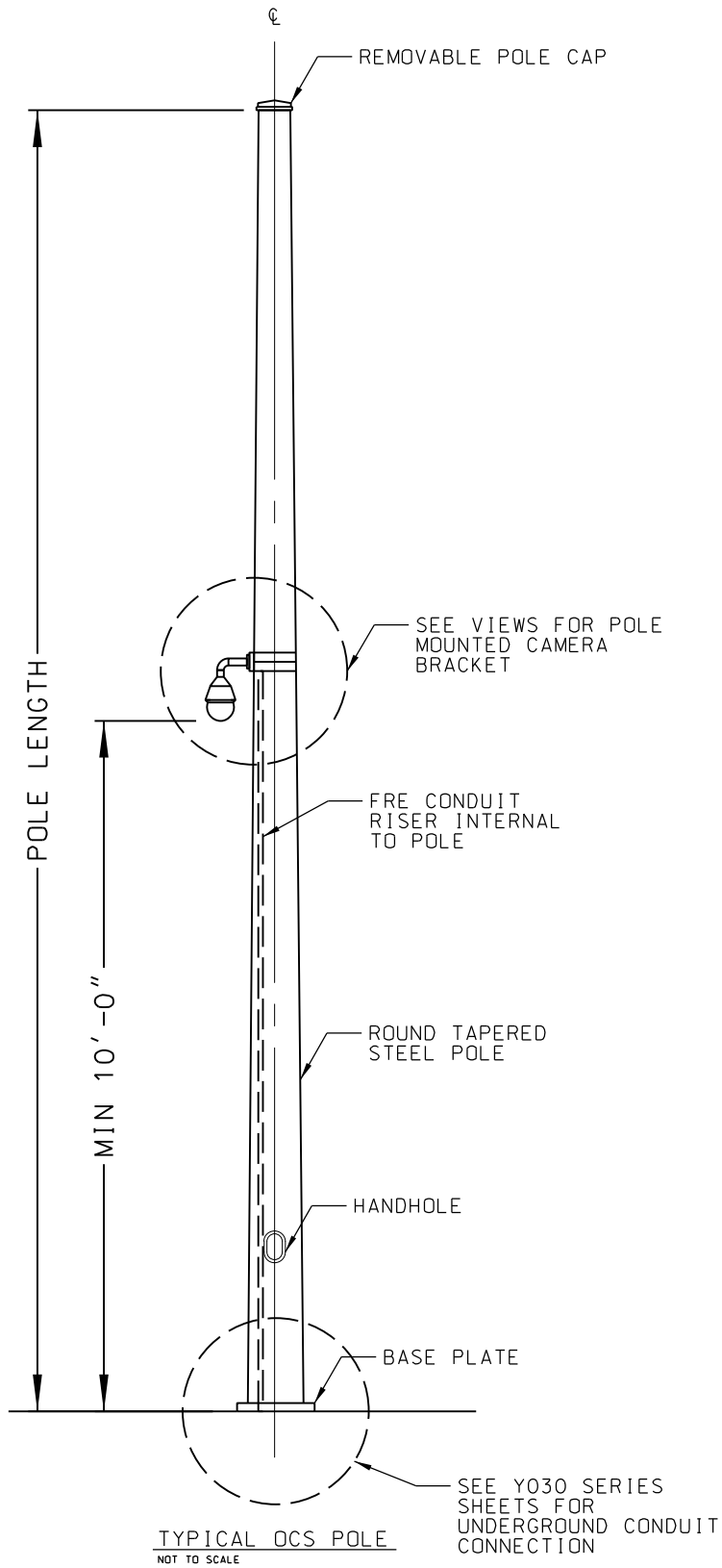
EQUIPMENT LIST

- 1 TIME CLOCK
- 2 [NOT USED]
- 3 POWER SURGE PROTECTOR DEVICE
- 4 GFCI SERVICE OUTLET
- 5 FIBER TERMINATION CASSETTE
- 6 SIGN CONTROLLER (2)
- 7 REMOTE REBOOT POWER STRIP
- 8 POWER OVER ETHERNET INJECTOR (2)
- 9 ETHERNET SWITCH
- 10 PAD MOUNT COMMERCIAL METERING CABINET/PEDESTAL WITH LOAD CENTER AND LIGHTING CONTROLS
- 11 ITS ROADSIDE CABINET
- 12 SHELF WITH PULL OUT DRAWER
- 13 UNINTERRUPTIBLE POWER SUPPLY
- 14 UNINTERRUPTIBLE POWER SUPPLY BATTERY
- 15 CELLULAR DATA MODEM WITH ANTENNA
- 16 DIN RAIL
- 17 CAT6 POE SURGE PROTECTORS

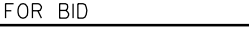
- GENERAL NOTES
- SUBMITTALS OF ALL EQUIPMENT MUST BE REVIEWED AND APPROVED PER SPECIFICATIONS.
 - SEE COMMUNICATION DETAILS - SPLICING DIAGRAMS FOR SYSTEM CONNECTIVITY.
 - LIGHTING CONTROLS AND LIGHTING POWER SUPPLIES WITHIN THIS CABINET ARE LIMITED TO LIGHTING DETAILED IN SHEETS P404 AND P405.

REV	DATE	DESCRIPTION	DESIGNED BY	JCM	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME:
			CHECKED BY	NWW	HDR	HDR Engineering, Inc.		CONTRACT NO.:
			DRAWN BY	MMQ	10450 Holmes Road			CONTRACT NO. ***
			CHECKED BY	NWW	Suite 600			VOLUME:
			APPROVED BY	NKS	Kansas City, MO 64131-3471			DRAWING NO.:
					816-360-2700			SHEET NO.:
					Certificate of Authority: 000856			P402 192
PLOT DATE: 12/22/2022			DATE 12-23-2022		NOT FOR CONSTRUCTION			





- GENERAL NOTES
1. SEE SHEET Y021 FOR TYPICAL POLE DETAIL.
 2. CAMERA TO BE INSTALLED ON THE OCS POLE SIDE FACING THE STREETCAR STATION AREA.
 3. OCS POLE DETAILS, POLE LENGTH, AND FOUNDATION SCHEDULE SHOWN ON DRAWINGS Y111 TO Y112.
 4. FOR TYPICAL POLE DETAILS, SEE DRAWINGS Y021 TO Y023.
 5. FOR POLE FOUNDATION DETAILS, SEE DRAWINGS Y031 TO Y039.
 6. POLE SURFACES WITH HOLES DRILLED FOR CAMERA CABLING SHALL BE TREATED WITH COLD ZINC PAINT TO INHIBIT RUST.

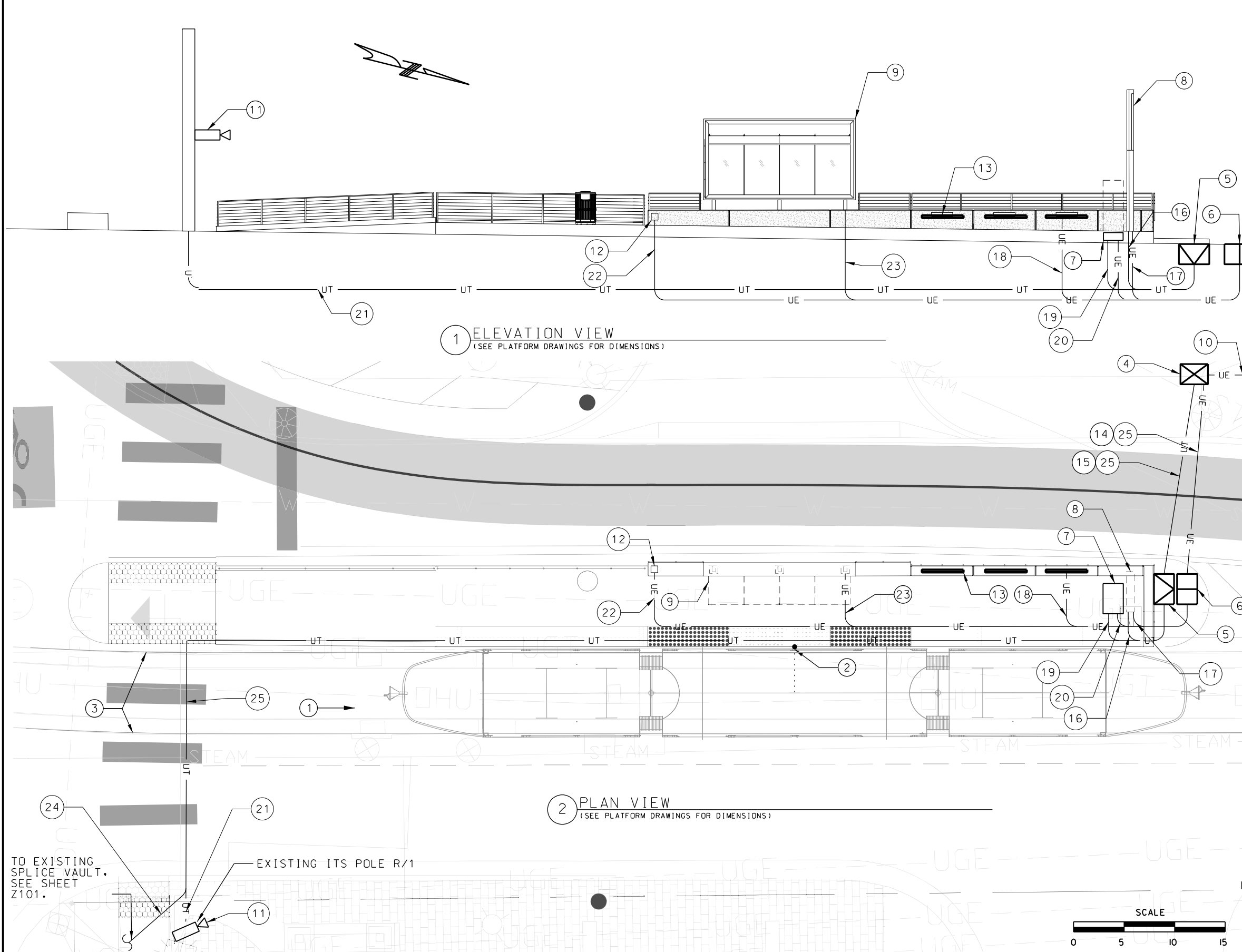
REV	DATE	DESCRIPTION	DESIGNED BY	JCM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	CCTV ATTACHMENT ON OCS POLE DETAILS	SCALE FOR 22"x34": NOT TO SCALE FILENAME:		
			CHECKED BY	NWW			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION			CONTRACT NO.:		
			DRAWN BY	MMO							CONTRACT NO. ***		
			CHECKED BY	NWW							VOLUME:		
			APPROVED BY	NKS							DRAWING NO.:	SHEET NO.:	
PLOT DATE: 12/22/2022		4:57:34 PM		DATE							12-23-2022	P403	193

KEYED NOTES

- 1 TRACK STATIONING INCREASES
- 2 STATION LOCATION POINT
OFFSET RIGHT = 4.63'
- 3 TRACK SLAB
- 4 342 ITS CABINET AND COMBINATION METER SERVICE
ENTRANCE PANELBOARD
- 5 COMMUNICATIONS PULL BOX.
ANSITIER 22 - 24X36X30 PULL BOX. SEE Z603
- 6 ELECTRICAL PULL BOX. SEE Z604
- 7 CONCRETE KNOCKOUT FOR FUTURE KIOSK. (12"X18").
EXPANSION JOINT USED TO STUB CONDUIT. FILL WITH
1500 PSI CONCRETE FOR FUTURE KNOCKOUT. SEE DETAIL
ON SHEET P203
- 8 MARKER WITH REAL TIME ARRIVAL SIGN
- 9 STREETCAR SHELTER
- 10 INSTALL POWER SERVICE CONDUCTORS, 2" CONDUIT
WITH PULL TAPE TO EVERY SERVICE PEDESTAL
OR UTILITY POLE. PROVIDE ADEQUATE CONDUIT FOR
EVERY TO COMPLETE THE DEVICE CONNECTION.
EVERY TO CONFIRM POINT OF POWER SUPPLY
LOCATION.
- 11 CCTV CAMERA ATTACHED ON ADJACENT LIGHT POLE OR
OCS POLE
- 12 GFCI OUTLET BOX ON FRONT OF SHELTER WALL
- 13 SEATWALL LIGHTING. SEE DETAIL ON P204.
- 14 2 - 2" CONDUIT (POWER) FROM ELEC PULLBOX TO
ELEC CABINET
- 15 2 - 2" CONDUIT (COMM) FROM COMM PULLBOX TO ITS
CABINET
- 16 1 - 1.25" CONDUIT (CAT6) FROM COMM PULLBOX TO
MARKER/RTA SIGN
- 17 1 - 1" CONDUIT (4*12, *12G) FROM ELEC PULLBOX TO
MARKER/RTA SIGN
- 18 1 - 1" CONDUIT (2*12, *12G) FROM ELEC PULLBOX TO
SEATWALL LIGHTS
- 19 1 - 1.25" CONDUIT (SPARE) FROM COMM PULLBOX TO
KIOSK KNOCKOUT
- 20 1 - 1" CONDUIT (SPARE) FROM ELEC PULLBOX TO KIOSK
KNOCKOUT
- 21 1 - 1.25" CONDUIT (CAT6) FROM COMM PULLBOX TO
CCTV
- 22 1 - 1" CONDUIT (2*12, *12G) FROM ELEC PULLBOX TO
GFCI IN SHELTER
- 23 1 - 1" CONDUIT (2*12, *12G) FROM ELEC PULLBOX TO
SHELTER LIGHTING. SEE P360 SERIES SHEETS FOR
SHELTER LIGHTING INSTALLATION DETAILS
- 24 1 - 1.25" CONDUIT (1FO 12CT) FROM SPLICE VAULT TO
ITS CABINET
- 25 ALL CONDUITS CROSSING STREET AND/OR TRACKS
SHALL BE RUN IN THE SAME TRENCH AND CONCRETE
ENCASED

GENERAL NOTES

1. REFER TO GENERAL NOTES AND SYMBOL LEGEND ON
SHEET P401



REV	DATE	DESCRIPTION	DESIGNED BY	JCM	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 5'
			CHECKED BY	NWW	HDR	HDR Engineering, Inc.	STREETCAR STOP	FILENAME:
			DRAWN BY	MMQ	10450 Holmes Road		RIVER MARKET NORTH SOUTHBOUND	CONTRACT NO.:
			CHECKED BY	NWW	Suite 600		ELECTRICAL AND ITS PLAN	CONTRACT NO. ***
			APPROVED BY	NKS	Kansas City, MO 64131-3471			VOLUME:
					816-360-2700			DRAWING NO.:
					Certificate of Authority: 000856			SHEET NO.:
								P404 194
PLOT DATE: 12/22/2022			4:57:49 PM		DATE 12-23-2022			



NOT FOR CONSTRUCTION

- ① TRACK STATIONING INCREASES
- ② STATION LOCATION POINT
OFFSET RIGHT = 4.63'
- ③ TRACK SLAB
- ④ 342 ITS CABINET AND COMBINATION METER SERVICE
ENTRANCE PANELBOARD
- ⑤ COMMUNICATIONS PULL BOX.
ANSI TIER 22 - 24X36X30 PULL BOX. SEE Z604
- ⑥ ELECTRICAL PULL BOX. SEE Z604
- ⑦ EXPANSION JOINT USED TO STUB CONDUIT. FILL WITH
1500 PSICONCRETE FOR FUTURE KNOCKOUT. SEE
DETAIL ON SHEET P203
- ⑧ MARKER WITH REAL TIME ARRIVAL SIGN
- ⑨ STREETCAR SHELTER
- ⑩ INSTALL POWER SERVICE CONDUCTORS, 2" CONDUIT
WITH PULL TAPE TO EVERY SERVICE PEDESTAL
OR UTILITY POLE. PROVIDE ADEQUATE CONDUIT FOR
EVERY TO COMPLETE THE DEVICE CONNECTION.
- ⑪ CCTV CAMERA ATTACHED ON ADJACENT LIGHT POLE
OR OCS POLE
- ⑫ GFCI OUTLET BOX ON FRONT OF SHELTER WALL
- ⑬ NOT USED
- ⑭ 2 - 2" CONDUIT (POWER) FROM ELEC PULLBOX TO
ELEC CABINET
- ⑮ 2 - 2" CONDUIT (COMM) FROM COMM PULLBOX TO ITS
CABINET
- ⑯ 1- 1.25" CONDUIT (CAT6) FROM COMM PULLBOX TO
MARKER/RTA SIGN
- ⑰ 1- 1" CONDUIT (4#12, #12G) FROM ELEC PULLBOX TO
MARKER/RTA SIGN
- ⑱ NOT USED
- ⑲ 1- 1.25" CONDUIT (SPARE) FROM COMM PULLBOX TO
KIOSK KNOCKOUT
- ⑳ 1- 1" CONDUIT (SPARE) FROM ELEC PULLBOX TO
KIOSK KNOCKOUT
- ㉑ 1- 1.25" CONDUIT (CAT6) FROM COMM PULLBOX TO
EAST CCTV
- ㉒ 1- 1" CONDUIT (2#12, #12G) FROM ELEC PULLBOX TO
GFCI IN SHELTER
- ㉓ 1- 1" CONDUIT (2#12, #12G) FROM ELEC PULLBOX TO
SHELTER LIGHTING. SEE P360 SERIES SHEETS
FOR SHELTER LIGHTING INSTALLATION DETAILS
- ㉔ 1- 1.25" CONDUIT (1FO 12CT) FROM SPLICE VAULT
TO ITS CABINET
- ㉕ 1- 1" CONDUIT SPARE FOR FUTURE CANOPY LIGHTING
- ㉖ 1- 1.25" CONDUIT (CAT6) FROM COMM PULLBOX TO
WEST CCTV

I. REFER TO GENERAL NOTES AND SYMBOL LEGEND ON SHEET P40I

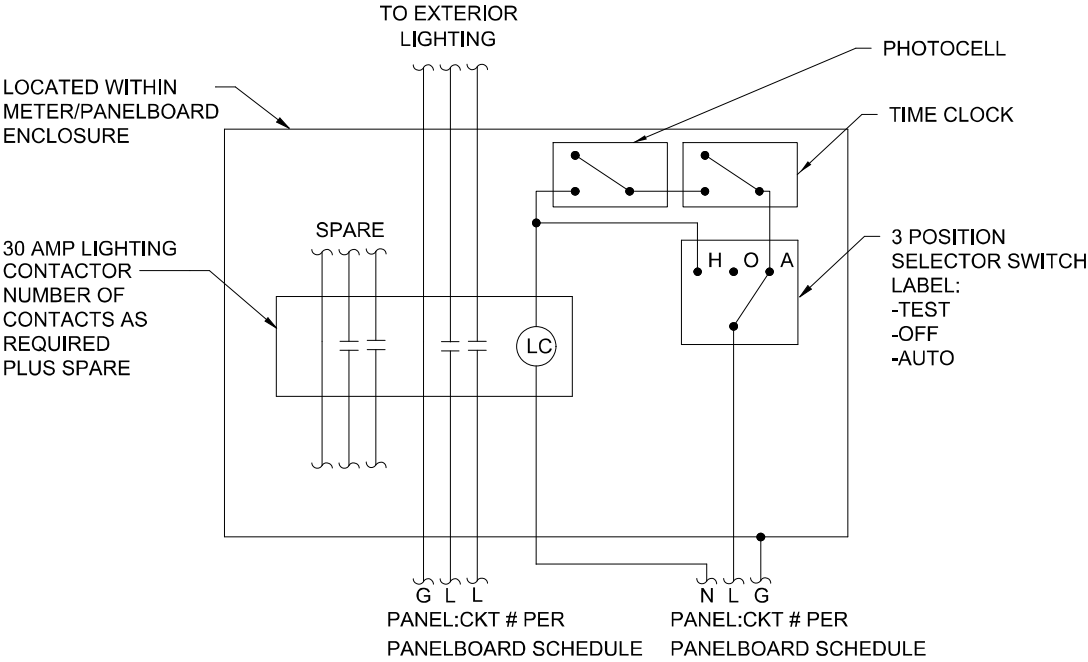


SERVICE PANEL: SHELTER TYPICAL

LOCATION: PLATFORM CABINET VOLTS: 240/120 A.I.C. RATING: 10KA
SUPPLY FROM: UTILITY POLE OR PEDESTAL PHASE: 1 MAINS TYPE: MCB
MOUNTING: FREE STANDING CABINET WIRE: 3+GND MAINS RATING: 100A
ENCLOSURE: NEMA 3R INTEGRAL SPD: YES SERVICE ENTRANCE LABEL: YES

CKT NO.	DESCRIPTION	CONNECTED LOAD (VA)				OCP			CONNECTED LOAD (VA)				DESCRIPTION	CKT NO.
		LTS	REC	MECH	MISC	AMPS	P		LTS	REC	MECH	MISC		
1	FUTURE KIOSK				240	20	1	A	20	1			SEAT WALL LIGHTS	2
3	FUTURE KIOSK				240	20	1	B	20	1			FUTURE CANOPY LIGHTS	4
5	RTA MARKER SIGN				300	20	1	A	20	1			500 ITS CIRCUIT 1	6
7	RTA MARKER LIGHT	100				20	1	B	20	1			500 ITS CIRCUIT 2	8
9	TIME CLOCK				100	20	1	A	20	1			500 ITS CIRCUIT 3	10
11	REC. SHELTER		180			20	1	B	20	1			500 ITS CIRCUIT 4	12
13	SPARE					20	1	A	20	1		180	RECEPTACLE - ITS	14
15	SPARE					20	1	B	20	1			SPARE	16
17	SPARE					20	1	A	20	2			SURGE PROTECTION	18
19	SPARE					20	1	B						20

LOAD SUMMARY													
	LTS	REC	MECH	MISC	SPARE	TOTAL	PHASE BALANCE						
CONNECTED LOAD (KVA)	0.6	0.4	0.0	2.9	---	3.9	240	LINE-TO-LINE VOLTS	PHASE A (KVA)	2			
DEMAND FACTOR	1.25	NEC	1.00	1.00	20%	---	16	CONNECTED AMPS	PHASE B (KVA)	2			
DESIGN LOAD (KVA)	0.8	0.4	0.0	2.9	0.8	4.8	20	DESIGN AMPS					



LIGHTING CONTROL NOTES:

1. SET INITIAL TIME CLOCK CONTROLS TO SWITCH OFF LIGHTS BETWEEN THE HOURS OF 12PM TO 5AM.

LCP LIGHTING CONTROL DIAGRAM

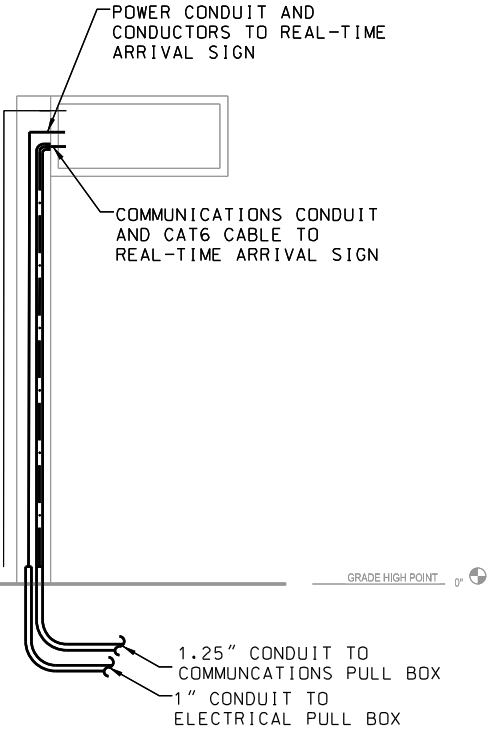
NOT TO SCALE

LUMINAIRE SCHEDULE

DWG ID	MANUFACTURER AND SERIES	DESCRIPTION	WATTS (MAX)	VOLTAGE	COLOR TEMP (K)	CRI (MIN)	LUMENS	MOUNTING	
								TYPE	HEIGHT
L1	BEGA, 24 104 SERIES	WALL RECESSED LINEAR PROFILE LED. 25 3/8" LENGTH. DIFFUSE OPTICS. WET LOCATION RATED.	9.6	120	3000	70	620	SEE NOTE 1	
LA	ACCLAIM FTB SERIES	LED STRUCTURE ACCENT STRIP ILGHT	3.75W/FT	120	3000	70	120/FT	SEE NOTE 2	
LB	ACCLAIM FLEXOS SERIES	EDGE ACCENT LIGHT	2.4W/FT	120	3000	70	200/FT	SEE NOTE 3	

NOTES:

1. MOUNTED RECESSED WITHIN CONCRETE SEAT WALL SEE ARCHITECTURAL DETAIL ON SHEET P204.
2. MOUNTED ON TOP, BOTTOM AND SIDES OF SHELTER FRAME GLASS TO EDGE LIGHT THE GLASS PER ARCHITECTURAL DETAIL P360 SERIES SHEETS
3. MOUNTED ON TYPE A SHELTER FRAME CANOPY WITHIN ALUMINUM CHANNEL. SEE ARCHITECTURAL DETAILS P360 SERIES SHEETS

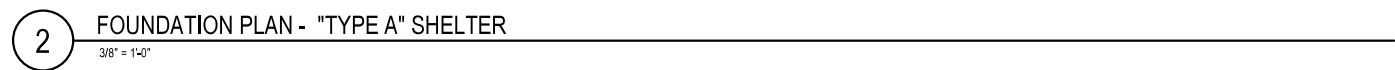
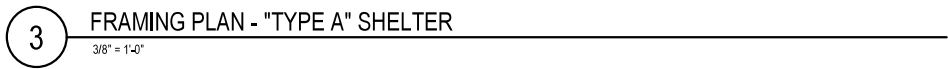


REAL TIME SIGN POST ELECTRICAL 2
1" = 1'

REV	DATE	DESCRIPTION	DESIGNED BY	JCM			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34":			
			CHECKED BY	NWW					10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			ITS TYPICAL DRAWING TYPICAL STOP ELECTRICAL SCHEDULES AND DETAILS		FILENAME:	
			DRAWN BY	MMQ								CONTRACT NO.:			
			CHECKED BY	NWW								CONTRACT NO. ***			
			APPROVED BY	NKS								VOLUME:			
PLOT DATE: 12/22/2022			4:58:37 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION					DRAWING NO.:	P406		
														SHEET NO.:	196

APPLICABLE CODES AND STANDARDS			MATERIALS OF CONSTRUCTION			STRUCTURAL STEEL			HEADED STUDS AND DEFORMED BAR ANCHORS								
1. ALL LOCAL, STATE, AND FEDERAL AGENCIES HAVING JURISDICTION OVER THIS PROJECT.			1. NORMAL WEIGHT CONCRETE GENERAL STRUCTURAL CONCRETE			4. DO NOT EXCAVATE BELOW THE BEARING ELEVATION OF ANY COMPLETED FOOTING NOR ANY CLOSER TO THE FOOTING THAN A SLOPE OF TWO HORIZONTAL (MEASURED FROM EDGE OF FOOTING TO NEAREST POINT IN EXCAVATION) TO ONE VERTICAL.			1. STEEL FRAMING DESIGNATIONS AND SYMBOLS ARE DEFINED IN THE STRUCTURAL STEEL SYMBOL LEGEND.			1. HEADED STUDS AND DEFORMED BAR ANCHORS SHALL BE ELECTRIC-ARC STUD WELDED PER MANUFACTURERS RECOMMENDATIONS AND THE AWS CODE. FILLET WELDING SHALL NOT BE ALLOWED WITHOUT APPROVAL OF THE STRUCTURAL ENGINEER. WELDMENT SHALL BE IN SUCH A MANNER AS TO PROVIDE COMPLETE FUSION BETWEEN THE END OF THE STUD AND THE PLATE. THERE SHOULD NO POROSITY OR EVIDENCE OF LACK OF FUSION BETWEEN THE WELDED END OF THE STUD AND THE PLATE. THE STUD WILL DECREASE IN LENGTH DURING WELDING APPROXIMATELY 1/8" FOR 5/8" DIAMETER STUDS AND SMALLER, 3/16" FOR LARGER THAN 5/8" DIAMETER.					
2. INTERNATIONAL BUILDING CODE (IBC): a. IBC 2018 EDITION			2. REINFORCING STEEL ASTM A615 GR 60			5. HORIZONTAL CONSTRUCTION JOINTS IN COLUMN FOOTINGS, PILE CAPS, SLABS ON GRADE AND MAT FOUNDATIONS ARE NOT PERMITTED.			2. ALL FIELD BOLTED SHEAR CONNECTIONS SHALL BE MADE WITH F1852 BOLTS, UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE FULLY PRETENSIONED AND INSPECTED USING TENSION CONTROL TWIST-OFF STYLE BOLTS. UNLESS SPECIFICALLY INDICATED AS SLIP CRITICAL OR PRETENSIONED, ALL JOINTS SHALL BE DESIGNATED AS SNUG TIGHT. ROUTINE OBSERVATION TO VERIFY THE SPLINED ENDS ARE PROPERLY SEVERED DURING INSTALLATION IS REQUIRED FOR ALL BOLTS.			2. HEADED STUDS SHALL BE TYPE B PER AWS CODE WITH MINIMUM ULTIMATE STRENGTH OF 65 KSI (450 MPa), NELSON GRANULAR FLUX FILLED OR APPROVED EQUAL. STUDS SHALL BE MANUFACTURED WITH COLD DRAWN BAR STOCK CONFORMING TO ASTM A108.					
3. AMERICAN CONCRETE INSTITUTE (ACI): a. ACI 318-14 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE			3. REINFORCING STEEL TO BE WELDED ASTM A706 GR 60			6. PROVIDE DOWELS FOR ALL WALLS EMBEDDED INTO COLUMN FOOTINGS, MAT FOUNDATIONS AND GRADE BEAMS. DOWELS SHALL BE THE SAME SIZE AND SPACING AS VERTICAL WALL REINFORCEMENT.			3. CANTILEVER BEAM SIZE MATCHES MAIN SPAN BEAM SIZE UNLESS NOTED OTHERWISE.			3. DEFORMED BAR ANCHORS SHALL COMPLY WITH ASTM A496 WITH MINIMUM YIELD STRENGTH OF 70 KSI (485 MPa).					
4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC): a. AISC 360-16 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS b. 2014 RCSC SPECIFICATION FOR HIGH-STRENGTH BOLTS c. AISC 303-10 CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES d. AISC 341-16 SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS			4. WELDED WIRE REINFORCING- ASTM A1064			7. BOTTOM OF ALL FOOTINGS AND PILE CAPS SUBJECT TO FROST SHALL BE PLACED AT OR BELOW FROST DEPTH.			4. PLACE NON-SHRINK GROUT UNDER ALL COLUMN BASE PLATES BEFORE PLACING ANY ELEVATED CONCRETE LEVELS.			4. DEFORMED BAR ANCHOR LENGTHS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:					
5. AMERICAN IRON AND STEEL INSTITUTE (AISI): a. AISI S100-16 NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS			5. STRUCTURAL STEEL WIDE FLANGE AND TEE SHAPES - ANGLES AND CHANNELS - PLATES - HSS RECTANGULAR AND SQUARE - HSS ROUND - PIPE - BOLTS - ANCHOR RODS ANCHOR RODS HIGH STRENGTH ANCHOR ROD ASSEMBLY			4. NO STAKES, STEEL OR WOOD, SHALL BE PERMITTED IN ANY CONCRETE POUR. SUSPEND FORMS FROM ABOVE GRADE.			5. WHERE THE WORK OF OTHER TRADES REQUIRES CUTS OR OPENINGS TO BE MADE IN STRUCTURAL STEEL MEMBERS, APPROVAL SHALL BE OBTAINED FROM THE ENGINEER. SUCH OPENINGS SHALL BE MADE IN THE SHOP AND CLEARLY INDICATED ON THE SHOP DRAWING.								
6. AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE): a. ASCE 7-16 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES			ASTM A992 Fy = 50 ksi ASTM A36 Fy = 36 ksi ASTM A529 Fy = 50 ksi ASTM A500 GR C Fy = 46 ksi ASTM A500 GR B Fy = 46 ksi ASTM F1852 Fu = 105 Ksi ASTM F1554 GR 55 Fy = 55 ksi ASTM F1554 GR 55 WELDABLE Fy = 55 ksi ASTM A563 GR 105 Fy = 105 ksi			5. ANCHOR RODS, DOWELS, REINFORCING STEEL, INSERTS, ETC, SHALL BE SECURELY TIED IN PLACE PRIOR TO POURING CONCRETE. CONCRETE BLOCKS ONLY SHALL BE USED TO SUPPORT REINFORCING OFF GRADE.			6. ALL WELDERS MUST BE QUALIFIED IN THE PROCESS USED AND AWS CERTIFIED.								
7. ASTM INTERNATIONAL (ASTM): a. ALL MATERIAL STANDARDS NOTED			HEADED STUDS DEFORMED BAR ANCHORS WELDING ELECTRODES			6. ALL REINFORCEMENT SHALL BE DETAILED, FABRICATED AND PLACED IN ACCORDANCE WITH ACI 315.			7. THE FOLLOWING PLATE THICKNESSES, WELD SIZES, AND ROD/BOLT DIAMETERS SHALL BE CONSIDERED EQUIVALENT, UNLESS NOTED OTHERWISE:								
8. AMERICAN WELDING SOCIETY (AWS): a. AWS D1.1-2015 STRUCTURAL WELDING CODE - STEEL b. AWS D1.3-2008 STRUCTURAL WELDING CODE - SHEET STEEL c. AWS D1.4-2017 STRUCTURAL WELDING CODE - REINFORCING STEEL d. AWS D1.8-2016 STRUCTURAL WELDING CODE - SEISMIC SUPPLEMENT			ASTM A108, TYPE B Fu = 65 ksi ASTM A496 GR 70 Fy = 70 ksi E70XX			7. PROVIDE MINIMUM CONCRETE COVERING FOR REINFORCEMENT AS FOLLOWS:			THICKNESS OR DIAMETER			BAR DIAMETER EMBEDMENT LENGTH					
DESIGN LOADS			2. SHRINK RESISTANT GROUT AT BASE/BRG PLATES AT 7 DAYS f'c = 4,000 psi AT 28 DAYS f'c = 8,000 psi						mm INCHES mm INCHES			3/8" 24" 1/2" 24" 5/8" 30"					
1. DEAD LOAD ACTUAL WEIGHT OF MATERIALS USED ADDING THE FOLLOWING: ALLOWANCE FOR ROOFING SYSTEM 11 psf			GENERAL CONSTRUCTION NOTES			CONDITION CLR COVER			6 3/16 16 5/8			ABBREVIATIONS					
2. ROOF LIVE LOAD ROOF 20 psf			1. STRUCTURAL DRAWINGS SHOULD NOT BE SCALED. PRINTED DIMENSIONS HAVE PRECEDENCE OVER SCALED DRAWINGS AND LARGE SCALE OVER SMALL.			CONCRETE DEPOSITED AGAINST EARTH FORMED SURFACES EXPOSED TO WEATHER OR IN CONTACT WITH EARTH: REINFORCING #6 OR LARGER 2 IN. REINFORCING LESS THAN #6 1 1/2 IN. FORMED SURFACES IN BUILDING INTERIOR: BEAMS, GIRDERS, AND COLUMNS 1 1/2 IN. SLABS, WALLS AND JOISTS 3/4 IN. REINFORCING #11 OR SMALLER			8 OR 6.5 1/4 19 OR 20 3/4			@ AT					
3. SNOW LOAD DATA GROUND SNOW LOAD, Pg 20 psf FLAT ROOF SNOW LOAD, Pf 20.2 psf SNOW EXPOSURE FACTOR, Ce 1.20 SNOW LOAD IMPORTANCE FACTOR, Is 1.00 THERMAL FACTOR, Ct 1.20 DRIFT SURCHARGE LOAD, Pd 5 psf WIDTH OF SNOW DRIFT, w 3.5 ft			2. ALL DRAWINGS AND SPECIFICATIONS ARE CONSIDERED TO BE A PART OF THE CONTRACT DOCUMENTS. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE CIVIL, ARCHITECTURAL, MECHANICAL, ELECTRICAL AND PLUMBING DRAWINGS FOR LOCATION AND SIZE OF OPENINGS, BLOCKOUTS, FLOOR DEPRESSIONS, CURBS, DIMENSIONS, ETC. NOT INDICATED ON THE STRUCTURAL DRAWINGS. THE LOCATION AND SIZE OF MECHANICAL AND ELECTRICAL OPENINGS IN SLABS, WALLS AND DECKS SHALL BE COORDINATED BY THE CONTRACTOR. PROVIDE ALL ADDITIONAL FRAMING OR REINFORCING TO ACCOMMODATE OPENINGS AS REQUIRED BY THE APPLICABLE STANDARD DETAILS SHOWN ON THE STRUCTURAL DRAWINGS. NO HOLES, NOTCHES, BLOCKOUTS, ETC. ARE ALLOWED IN STRUCTURAL MEMBERS UNLESS DETAILED ON THE STRUCTURAL DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.			6. PROVIDE DOWELS OF SAME SIZE AND NUMBER FROM ADJACENT POUR. BOTH VERTICALLY AND HORIZONTALLY, TO MATCH TYPICAL REINFORCING SHOWN. LAPS TO BE IN ACCORDANCE WITH THE DEVELOPMENT LENGTH AND LAP SPICE SCHEDULE. DOWELS SHALL BE CLEANED AFTER POUR.			8 5/16 22 7/8			AB ANCHOR BOLTS					
4. WIND DESIGN DATA ULTIMATE DESIGN WIND SPEED, Vult 110 mph NOMINAL DESIGN WIND SPEED, Vasd 85 mph RISK CATEGORY II WIND EXPOSURE CATEGORY C INTERNAL PRESSURE COEFFICIENT 0 DESIGN WIND PRESSURES FOR COMPONENTS AND CLADDING: ROOF 52 psf WALL 42 psf			3. WHERE DIMENSIONS ARE PROVIDED FOR OPENINGS, BLOCKOUTS, FLOOR DEPRESSIONS, CURBS, ETC., BUT MAY BE AFFECTED BY THE EQUIPMENT PURCHASED, THE CONTRACTOR SHALL VERIFY THE INFORMATION PROVIDED PRIOR TO CONSTRUCTION.			9. FIELD WELDING OR BENDING OF REINFORCING IS NOT PERMITTED EXCEPT AS INDICATED ON THE DRAWINGS OR AS APPROVED BY THE STRUCTURAL ENGINEER. USE LOW HYDROGEN ELECTRODES GRADE E70 OR E80 AS REQUIRED.			9.5 OR 10 3/8 25 1			ADDL ADDITIONAL					
5. EARTHQUAKE DESIGN DATA RISK CATEGORY II SEISMIC IMPORTANCE FACTOR, Is 1.0 MAPPED SPECTRAL RESPONSE ACCELERATION PARAMETERS: Ss 0.095 g S1 0.069 g D 0 SITE CLASS D DESIGN SPECTRAL RESPONSE ACCELERATION PARAMETERS: Sds 0.102 g Sd1 0.11 g B SEISMIC DESIGN CATEGORY: BASIC SEISMIC FORCE-RESISTING SYSTEM(S): INVERTED PENDULUM STRUCTURES RESPONSE MODIFICATION COEFFICIENT, R 2.0 SEISMIC RESPONSE COEFFICIENT, Cs 0.051			4. PROVIDE CONCRETE EQUIPMENT PADS AND INERTIAL BASES FOR MECHANICAL AND ELECTRICAL INSTALLATIONS. CONSTRUCT PADS AND BASES IN ACCORDANCE WITH THE TYPICAL DETAILS. SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR LIMITS AND LOCATIONS.			10. APPROVED ELECTRICAL CONDUIT MATERIAL CAST WITHIN STRUCTURAL CONCRETE MEMBERS SHALL CONFORM TO ACI 318 UNO AND TO THE FOLLOWING: A. PERMITTED CONDUIT SHALL BE PLACED INSIDE THE REINFORCING CAGE IN COLUMNS, WALLS, AND SLABS, AND BELOW REINFORCING IN SLABS ON GRADE. B. CONDUIT IN CONCRETE COLUMNS AND WALLS: INSTALL NO HORIZONTAL CONDUIT AND NO VERTICAL CONDUIT LARGER THAN 3/4". DO NOT INSTALL MULTIPLE CONDUITS IN A SINGLE CONCRETE COLUMN NOR SPACE VERTICAL CONDUITS CLOSER THAN 4-0" ON CENTER IN WALLS WITHOUT THE APPROVAL OF THE STRUCTURAL ENGINEER. C. CONDUIT IN SLAB ON GRADE DIAMETER OF A SINGLE CONDUIT OR TWO OR MORE VERTICALLY STACKED CONDUITS (INCLUDING CROSsoVERS) SHALL NOT EXCEED 1/3 THE THICKNESS OF THE SLAB, THE OUTSIDE DIMENSION OF TWO OR MORE ADJACENT CONDUITS SHALL NOT EXCEED TWICE THE DEPTH OF THE SLAB AND THE SEPARATION BETWEEN GROUPS OF CONDUITS SHALL NOT BE LESS THAN THE THICKNESS OF THE SLAB. D. CONDUIT IN ELEVATED SLABS: DO NOT INSTALL CONDUIT IN CONCRETE SLABS ON STEEL DECK. DIAMETER OF A SINGLE CONDUIT OR TWO OR MORE VERTICALLY STACKED CONDUITS (INCLUDING CROSsoVERS) SHALL NOT EXCEED 1/6 THE THICKNESS OF THE SLAB, THE OUTSIDE HORIZONTAL DIMENSION OF TWO OR MORE ADJACENT CONDUITS SHALL NOT EXCEED THE DEPTH OF THE SLAB AND THE SEPARATION BETWEEN GROUPS OF CONDUITS SHALL NOT BE LESS THAN THE THICKNESS OF THE SLAB. E. DO NOT INSTALL CONDUIT IN PARKING GARAGE SLABS. F. DO NOT INSTALL CONDUIT IN BEAMS.			11. CONTINUOUS REINFORCEMENT IN WALLS AND FOOTINGS MAY BE SPLICED AS REQUIRED, PROVIDED THAT BARS ARE OF THE LONGEST PRACTICAL LENGTH AND ALL SPLICES ARE SHOWN ON THE REINFORCING BAR SHOP DRAWINGS. SPLICES ARE TO BE STAGGERED WHEN POSSIBLE. PROVIDE LAP SPLICES AND DEVELOPMENT LENGTHS IN ACCORDANCE WITH THE DEVELOPMENT LENGTH AND LAP SPICE SCHEDULE. USE CLASS B LAP SPLICES UNLESS NOTED OTHERWISE.			12. CORING OF SLABS, BEAMS, COLUMNS, OR WALLS IS NOT PERMITTED. PROVIDE SLEEVES FOR ALL PENETRATIONS PRIOR TO PLACING CONCRETE.			CJ CAST IN PLACE		
FOUNDATION DESIGN			5. THE CONTRACTOR SHALL VISIT THE SITE AND GET FAMILIAR WITH EXISTING CONDITIONS. CHECK AND VERIFY EXISTING DIMENSIONS AND TAKE ADDITIONAL MEASUREMENTS AS NEEDED. NOTIFY THE ARCHITECT OF ANY DISCREPANCY BETWEEN ACTUAL CONDITIONS AND INDICATED CONDITIONS. MODIFICATION OF DETAILS OF CONSTRUCTION SHALL NOT BE MADE WITHOUT WRITTEN APPROVAL OF THE ARCHITECT OR STRUCTURAL ENGINEER.			13. ALL SHOP AND FIELD WELDS SHALL BE PREQUALIFIED WELDS. ANY WELDS BEYOND THE RANGE OR TOLERANCE OR REQUIREMENTS FOR PREQUALIFICATION SHALL BE QUALIFIED BY TEST PER AWS D1.1, CLAUSE 4 PART B. WELDS AT BASE METALS OVER 2" IN THICKNESS ARE NOT ALLOWED AS PREQUALIFIED WELD JOINTS WITHOUT TESTING.			10. ALL GROOVE WELDS INDICATED ON PLANS AND SECTIONS SHALL BE COMPLETE JOINT PENETRATION (CJP) WELDS UNLESS SPECIFICALLY INDICATED TO BE PARTIAL JOINT PENETRATION (PJP) WELDS.			CJP COMPLETE JOINT PENETRATION					
1. THE FOUNDATION DESIGN IS BASED UPON THE GEOTECHNICAL REPORT PREPARED BY TSI GEOTECHNICAL REPORT NUMBER 20222003.00 DATED AUGUST 25, 2022. CANOPIES SHALL BE SUPPORTED ON NATIVE SOILS OR NEW STRUCTURAL FILL THAT MEETS THE REQUIREMENTS OF SECTION 6.3 OF THE GEOTECHNICAL REPORT. SEE REPORT FOR EXCAVATION AND ALL OTHER GEOTECHNICAL REQUIREMENTS FOR FOUNDATIONS.			6. CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR THE PROTECTION AND REPAIR OF ADJACENT EXISTING SURFACES AND AREAS WHICH MAY BE DAMAGED BY NEW WORK.			14. A WELDING PROCEDURE SPECIFICATION (WPS) PER AWS D1.1 SHALL BE DEVELOPED BY THE FABRICATOR/ERECTOR AND APPROVED BY THE STRUCTURAL ENGINEER OR HIS DESIGNEE. THE WPS SHALL INCLUDE THE WELDING PARAMETERS RECOMMENDED BY THE ELECTRODE MANUFACTURER. THE WPS MUST BE SUBMITTED AND APPROVED BEFORE ANY WELDING MAY BEGIN. ALLOW A MINIMUM OF FOUR WEEKS FOR THE REVIEW PROCESS.			11. ALL COMPLETE JOINT PENETRATION GROOVE WELDS AND FILLET WELDS AT BRACING CONNECTIONS SHALL HAVE A FILLER METAL WITH A MINIMUM NOTCH TOUGHNESS OF 20 FOOT-POUNDS AVERAGE AT MINUS 20 DEGREES FAHRENHEIT.			CONC CONCRETE					
2. ASSUMED ALLOWABLE BEARING CAPACITY 2,000 PSF			7. ALL COLUMNS AND FOUNDATIONS, UNLESS NOTED OTHERWISE, SHALL BE CENTERED ON GRIDLINES IN EACH DIRECTION. BEAMS SHALL BE EQUALLY SPACED BETWEEN COLUMN CENTERLINES UNLESS NOTED OTHERWISE.			15. A PRE-CONSTRUCTION MEETING BETWEEN THE STRUCTURAL ENGINEER, THE FABRICATOR, THE ERECTOR, THE CONTRACTOR, AND THE INSPECTORS SHALL TAKE PLACE TO DISCUSS THE WELDING PROCEDURE SPECIFICATIONS (WPS) TO INSURE THE QUALITY OF WORK THAT THE DESIGNER OF RECORD HAS SPECIFIED. THE WELDING ELECTRODE MANUFACTURER'S SPECIFICATIONS SHOULD BE ATTACHED TO THE WPS ON ALL JOBS. ALL WELDERS AND INSPECTORS SHALL BE INSTRUCTED IN THE PROPER USE OF THE WPS AND SHALL ALSO BE INSTRUCTED TO RETAIN A COPY OF THE WPS.			12. E70XX ELECTRODES SHALL BE USED FOR ALL WELDING. THE WELDING OF E7018 OVER E70T2-K2 IS NOT ALLOWED. THE MIXING OF ANY OTHER PROCESSES AND WIRES MUST BE SUBMITTED TO THE STRUCTURAL ENGINEER OF RECORD FOR APPROVAL. THE USE OF E70T14 IS NOT ALLOWED. IN GROOVE WELDS, FCW FILLER METAL WIRE SHALL BE LIMITED TO 5/64" DIAMETER. SMAW WELDING ELECTRODES SHALL BE LIMITED TO 5/32" DIAMETER.			CONV CONNECTION					
3. FROST DEPTH EMBED ALL FOOTINGS TO -3'-0"			8. TYPICAL DETAILS SHALL APPLY IN GENERAL CONSTRUCTION UNLESS SPECIFICALLY DETAILED. WHERE NO DETAILS ARE GIVEN, CONSTRUCTION SHALL BE AS SHOWN FOR SIMILAR WORK.			16. THE FOLLOWING SPECIAL REQUIREMENTS SHALL APPLY TO BEAM TO COLUMN CONNECTIONS WITH WELDED BEAM FLANGES DESIGNATED AS A PART OF THE SEISMIC FORCE-RESISTING SYSTEM: A. NO WELD DAMS ARE ALLOWED. B. BEAM FLANGE TO COLUMN WELDS SHALL BE MADE BEFORE BOLTS ARE TENSIONED. C. WELDING SEQUENCE: BOTH FLANGES SHALL BE WELDED PRIOR TO ANY SUPPLEMENTAL WELDING TO THE SHEAR TAB. D. RUN-OFF TABS PER AWS D1.1 ARE REQUIRED FOR THE COMPLETE JOINT PENETRATION (CJP) FLANGE GROOVE WELDS. ALL WELDS ARE TO BE STARTED AND COMPLETED ON THE RUN-OFF TABS AS MUCH AS PRACTICABLE. E. RUN-OFF TABS SHALL BE REMOVED AND THE ENDS GROUND SMOOTH (I.E. NO PITS OR GOUGES, SUITABLE FOR MAGNETIC PARTICLE TESTING). BACK-UP BARS, IF USED, SHALL BE REMOVED AT ALL BEAM BOTTOM FLANGES. BACK-GOUGED AND BACK-WELDED. BACK-UP BARS AT TOP FLANGES MAY REMAIN. RUN OFF TABS ARE ALSO REQUIRED TO BE REMOVED ON COLUMN SPLICES IN ACCORDANCE WITH AISC 341. WELD TABS SHALL BE REMOVED AND GROUND FLUSH TO THE BEAM FLANGE. F. THE WELD ROOT SHALL BE INSPECTED AND TESTED PER AWS REQUIREMENTS GIVEN IN CHAPTER 6. IF REJECTABLE INDICATIONS ARE FOUND, REMOVE BY BACK-GOUGING TO SOUND METAL. G. A FILLET WELD SHALL BE APPLIED TO REINFORCE THE JOINT. THE SIZE OF THE REINFORCING WELD SHALL BE EQUAL TO ONE QUARTER OF THE BEAM FLANGE THICKNESS (T), BUT NOT LESS THAN 1/4" NOR MORE THAN 3/8" PER NOTE J OF FIGURE 3.4 OF D1.1. H. ALL WELD TABS (RUNOFF TABS) ON ALL CJP WELDS OF SMRF COLUMNS SHALL BE REMOVED AND GROUND SMOOTH. I. FOR THE WELD OF THE BOTTOM BEAM FLANGE TO THE COLUMN FLANGE, FOLLOW STEPS 1. THROUGH 7 BELOW: 1. THE ROOT PASS SHOULD NOT EXCEED A 1/4" IN LAYER THICKNESS. 2. THE WELD SHALL BE INITIATED ON THE WELD TAB WITH TRAVEL PROGRESSING TOWARD THE CENTER OF THE GIRDER FLANGE WIDTH. STOP WELD APPROXIMATELY 1" BEFORE THE BEAM WEB AND MOVE TO THE OTHER SIDE OF THE BEAM WEB TO RESTART WELD. DO NOT LEAVE WELD CRATER DIRECTLY IN THE CENTER OF THE BEAM FLANGE WIDTH. 3. THE HALF LENGTH ROOT PASS SHALL BE THOROUGHLY CLEANED OF ALL SLAG. 4. THE END OF THE HALF LENGTH ROOT PASS THAT IS NEAR THE CENTER OF THE BEAM FLANGE SHOULD BE VISUALLY INSPECTED TO ENSURE FUSION, SOUNDNESS, FREEDOM FROM SLAG INCLUSIONS AND EXCESSIVE POROSITY. THE RESULTING BEAD PROFILE SHOULD BE SUITABLE FOR OBTAINING FUSION BY THE SUBSEQUENT PASS TO BE INITIATED ON THE OPPOSITE SIDE OF THE GIRDER WEB. IF THE PROFILE IS NOT CONDUCIVE TO GOOD FUSION, THE START OF THE FIRST ROOT PASS SHOULD BE GROUND GOUGED, CHIPPED OR OTHERWISE PREPARED TO ENSURE ADEQUATE FUSION. 5. THE SECOND HALF OF THE WELD JOINT SHALL HAVE THE ROOT PASS APPLIED BEFORE ANY OTHER WELD PASSES ARE PERFORMED. THE ARC SHOULD BE INITIATED AT THE END OF THE HALF LENGTH ROOT PASS THAT IS NEAR THE CENTER OF THE BEAM FLANGE, AND TRAVEL SHOULD PROGRESS TO THE OUTBOARD END OF THE JOINT, TERMINATING ON THE WELD TAB. 6. EACH WELD LAYER SHALL BE COMPLETED ON BOTH SIDES OF THE JOINT BEFORE A NEW LAYER IS DEPOSITED. 7. WELD TABS SHALL BE REMOVED AND GROUND FLUSH TO THE BEAM FLANGE.			9. EQUIVALENT BAR SIZES ARE DEFINED AS FOLLOWS:			13. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CJ/C CONSTRUCTION OR CONTROL JOINT		
			9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ADEQUATE DESIGN AND CONSTRUCTION OF ALL FORMS, SHORING AND TEMPORARY BRACING. THE CONTRACTOR SHALL PROVIDE ALL MEASURES NECESSARY TO PROTECT THE STRUCTURE AND SAFETY OF WORKERS DURING CONSTRUCTION.			14. A WELDING PROCEDURE SPECIFICATION (WPS) PER AWS D1.1 SHALL BE DEVELOPED BY THE FABRICATOR/ERECTOR AND APPROVED BY THE STRUCTURAL ENGINEER OR HIS DESIGNEE. THE WPS SHALL INCLUDE THE WELDING PARAMETERS RECOMMENDED BY THE ELECTRODE MANUFACTURER. THE WPS MUST BE SUBMITTED AND APPROVED BEFORE ANY WELDING MAY BEGIN. ALLOW A MINIMUM OF FOUR WEEKS FOR THE REVIEW PROCESS.			10. ALL GROOVE WELDS INDICATED ON PLANS AND SECTIONS SHALL BE COMPLETE JOINT PENETRATION (CJP) WELDS UNLESS SPECIFICALLY INDICATED TO BE PARTIAL JOINT PENETRATION (PJP) WELDS.			CONC CONCRETE					
			A. DO NOT PLACE CONSTRUCTION MATERIALS OR OTHER CONSTRUCTION LOADS ON THE STRUCTURE SUCH THAT THE LOADS PLACED EXCEED THE CAPACITY OF THE STRUCTURE.			15. A PRE-CONSTRUCTION MEETING BETWEEN THE STRUCTURAL ENGINEER, THE FABRICATOR, THE ERECTOR, THE CONTRACTOR, AND THE INSPECTORS SHALL TAKE PLACE TO DISCUSS THE WELDING PROCEDURE SPECIFICATIONS (WPS) TO INSURE THE QUALITY OF WORK THAT THE DESIGNER OF RECORD HAS SPECIFIED. THE WELDING ELECTRODE MANUFACTURER'S SPECIFICATIONS SHOULD BE ATTACHED TO THE WPS ON ALL JOBS. ALL WELDERS AND INSPECTORS SHALL BE INSTRUCTED IN THE PROPER USE OF THE WPS AND SHALL ALSO BE INSTRUCTED TO RETAIN A COPY OF THE WPS.			11. ALL COMPLETE JOINT PENETRATION GROOVE WELDS AND FILLET WELDS AT BRACING CONNECTIONS SHALL HAVE A FILLER METAL WITH A MINIMUM NOTCH TOUGHNESS OF 20 FOOT-POUNDS AVERAGE AT MINUS 20 DEGREES FAHRENHEIT.			CONST CONSTRUCTION					
			B. TAKE INTO CONSIDERATION THAT FULL STRUCTURAL CAPACITY OF MANY STRUCTURAL MEMBERS IS NOT REALIZED UNTIL STRUCTURAL ASSEMBLY IS COMPLETE; THAT IS, UNTIL SLABS, DECKS, DIAGONAL BRACING AND SHEAR WALLS ARE INSTALLED.			16. THE FOLLOWING SPECIAL REQUIREMENTS SHALL APPLY TO BEAM TO COLUMN CONNECTIONS WITH WELDED BEAM FLANGES DESIGNATED AS A PART OF THE SEISMIC FORCE-RESISTING SYSTEM: A. NO WELD DAMS ARE ALLOWED. B. BEAM FLANGE TO COLUMN WELDS SHALL BE MADE BEFORE BOLTS ARE TENSIONED. C. WELDING SEQUENCE: BOTH FLANGES SHALL BE WELDED PRIOR TO ANY SUPPLEMENTAL WELDING TO THE SHEAR TAB. D. RUN-OFF TABS PER AWS D1.1 ARE REQUIRED FOR THE COMPLETE JOINT PENETRATION (CJP) FLANGE GROOVE WELDS. ALL WELDS ARE TO BE STARTED AND COMPLETED ON THE RUN-OFF TABS AS MUCH AS PRACTICABLE. E. RUN-OFF TABS SHALL BE REMOVED AND THE ENDS GROUND SMOOTH (I.E. NO PITS OR GOUGES, SUITABLE FOR MAGNETIC PARTICLE TESTING). BACK-UP BARS, IF USED, SHALL BE REMOVED AT ALL BEAM BOTTOM FLANGES. BACK-GOUGED AND BACK-WELDED. BACK-UP BARS AT TOP FLANGES MAY REMAIN. RUN OFF TABS ARE ALSO REQUIRED TO BE REMOVED ON COLUMN SPLICES IN ACCORDANCE WITH AISC 341. WELD TABS SHALL BE REMOVED AND GROUND FLUSH TO THE BEAM FLANGE. F. THE WELD ROOT SHALL BE INSPECTED AND TESTED PER AWS REQUIREMENTS GIVEN IN CHAPTER 6. IF REJECTABLE INDICATIONS ARE FOUND, REMOVE BY BACK-GOUGING TO SOUND METAL. G. A FILLET WELD SHALL BE APPLIED TO REINFORCE THE JOINT. THE SIZE OF THE REINFORCING WELD SHALL BE EQUAL TO ONE QUARTER OF THE BEAM FLANGE THICKNESS (T), BUT NOT LESS THAN 1/4" NOR MORE THAN 3/8" PER NOTE J OF FIGURE 3.4 OF D1.1. H. ALL WELD TABS (RUNOFF TABS) ON ALL CJP WELDS OF SMRF COLUMNS SHALL BE REMOVED AND GROUND SMOOTH. I. FOR THE WELD OF THE BOTTOM BEAM FLANGE TO THE COLUMN FLANGE, FOLLOW STEPS 1. THROUGH 7 BELOW: 1. THE ROOT PASS SHOULD NOT EXCEED A 1/4" IN LAYER THICKNESS. 2. THE WELD SHALL BE INITIATED ON THE WELD TAB WITH TRAVEL PROGRESSING TOWARD THE CENTER OF THE GIRDER FLANGE WIDTH. STOP WELD APPROXIMATELY 1" BEFORE THE BEAM WEB AND MOVE TO THE OTHER SIDE OF THE BEAM WEB TO RESTART WELD. DO NOT LEAVE WELD CRATER DIRECTLY IN THE CENTER OF THE BEAM FLANGE WIDTH. 3. THE HALF LENGTH ROOT PASS SHALL BE THOROUGHLY CLEANED OF ALL SLAG. 4. THE END OF THE HALF LENGTH ROOT PASS THAT IS NEAR THE CENTER OF THE BEAM FLANGE SHOULD BE VISUALLY INSPECTED TO ENSURE FUSION, SOUNDNESS, FREEDOM FROM SLAG INCLUSIONS AND EXCESSIVE POROSITY. THE RESULTING BEAD PROFILE SHOULD BE SUITABLE FOR OBTAINING FUSION BY THE SUBSEQUENT PASS TO BE INITIATED ON THE OPPOSITE SIDE OF THE GIRDER WEB. IF THE PROFILE IS NOT CONDUCIVE TO GOOD FUSION, THE START OF THE FIRST ROOT PASS SHOULD BE GROUND GOUGED, CHIPPED OR OTHERWISE PREPARED TO ENSURE ADEQUATE FUSION. 5. THE SECOND HALF OF THE WELD JOINT SHALL HAVE THE ROOT PASS APPLIED BEFORE ANY OTHER WELD PASSES ARE PERFORMED. THE ARC SHOULD BE INITIATED AT THE END OF THE HALF LENGTH ROOT PASS THAT IS NEAR THE CENTER OF THE BEAM FLANGE, AND TRAVEL SHOULD PROGRESS TO THE OUTBOARD END OF THE JOINT, TERMINATING ON THE WELD TAB. 6. EACH WELD LAYER SHALL BE COMPLETED ON BOTH SIDES OF THE JOINT BEFORE A NEW LAYER IS DEPOSITED. 7. WELD TABS SHALL BE REMOVED AND GROUND FLUSH TO THE BEAM FLANGE.			INCH POUND SOFT METRIC			17. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE		
			C. PROVIDE TEMPORARY BRACING AND GUYING TO PROVIDE STABILITY AND RESIST ALL LOADS TO WHICH THE PARTIALLY COMPLETED STRUCTURE MAY BE SUBJECTED INCLUDING ERECTION EQUIPMENT AND ITS OPERATION. ADEQUACY OF TEMPORARY BRACING AND GUYING FOR THIS PURPOSE IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.			#3 #10 #4 #13 #5 #16 #6 #19 #7 #22 #8 #25 #9 #29 #10 #32 #11 #36 #14 #53 #18 #57			18. ALL STEEL EXPOSED TO WEATHER SHALL BE HOT-DIPPED GALVANIZED.			CONC CONCRETE					
			D. DO NOT BACKFILL AGAINST BASEMENT WALLS UNTIL FRAMED SLAB AND SLAB ON GRADE LOCATED AT TOP AND BOTTOM OF BASEMENT WALLS HAVE BEEN PLACED AND HAVE REACHED THEIR 28-DAY DESIGN STRENGTH.						19. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
			EARTHWORK AND FOUNDATIONS						20. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
1. ALL EARTHWORK AND SITE PREPARATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE SPECIFICATIONS AND THE GEOTECHNICAL REPORT. ALL FOUNDATION EXCAVATIONS SHALL BE OBSERVED AND APPROVED BY THE GEOTECH.			1. ALL EARTHWORK AND SITE PREPARATION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH THE SPECIFICATIONS AND THE GEOTECHNICAL REPORT. ALL FOUNDATION EXCAVATIONS SHALL BE OBSERVED AND APPROVED BY THE GEOTECH.						21. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
2. ANY EXISTING FILLS OR UNSUITABLE SOILS AS DETERMINED BY THE GEOTECH SHALL BE EXCAVATED AND REPLACED WITH PROPERLY COMPACTED FILL.			2. ANY EXISTING FILLS OR UNSUITABLE SOILS AS DETERMINED BY THE GEOTECH SHALL BE EXCAVATED AND REPLACED WITH PROPERLY COMPACTED FILL.						22. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
3. EXTREME CARE SHALL BE EXERCISED WHEN EXCAVATING OR GRADING ADJACENT TO EXISTING STRUCTURES OR IMPROVEMENTS SO AS NOT TO DAMAGE OR UNDERMINE FOUNDATIONS, WALLS, SLABS, UTILITIES, ETC.			3. EXTREME CARE SHALL BE EXERCISED WHEN EXCAVATING OR GRADING ADJACENT TO EXISTING STRUCTURES OR IMPROVEMENTS SO AS NOT TO DAMAGE OR UNDERMINE FOUNDATIONS, WALLS, SLABS, UTILITIES, ETC.						23. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									24. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									25. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
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									29. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									30. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									31. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									32. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									33. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									34. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									35. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									36. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									37. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
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									39. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									40. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
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									43. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									44. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									45. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									46. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									47. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
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									49. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									50. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
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									53. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
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									56. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									57. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									58. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									59. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									60. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									61. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									62. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED.			CONC CONCRETE					
									63. INSPECTORS ARE TO BE DEPUTY INSPECTORS AND AWS QC-1 CERTIFIED								

1. ALL EXPOSED STEEL SHALL BE HOT DIP GALVANIZED.
2. ALL STEEL ON THIS SHEET SHALL COMPLY TO AESS - ARCHITECTURALLY EXPOSED STRUCTURAL STEEL SPECIFICATIONS.



REV	DATE	DESCRIPTION	DESIGNED BY	VC			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION "TYPE A" SHELTER - FOUNDATION AND FRAMING PLANS	SCALE FOR 22"x34": AS SHOWN FILENAME:
			CHECKED BY	NPK			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			CONTRACT NO.:
			DRAWN BY	NPK						CONTRACT NO. ***
			CHECKED BY	VC						VOLUME:
			APPROVED BY	NKS						DRAWING NO.:
										SHEET NO.:
PLOT DATE: 12/21/2022		11:11:02 PM	DATE	12-23-2022					PS101	199

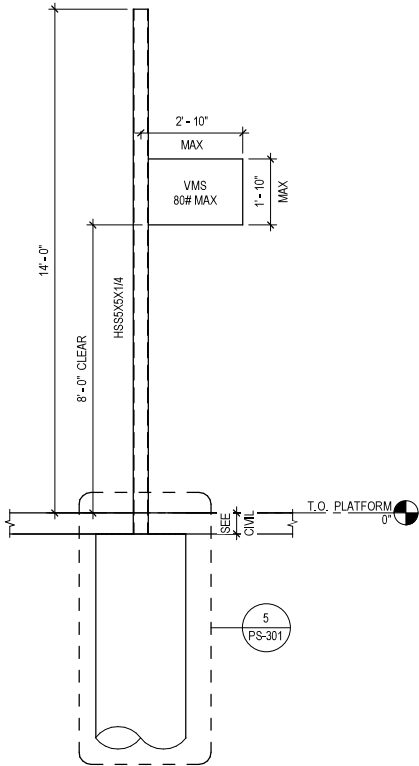
1. ALL EXPOSED STEEL SHALL BE HOT DIP GALVANIZED.
2. ALL STEEL ON THIS SHEET SHALL COMPLY TO AESS - ARCHITECTURALLY EXPOSED STRUCTURAL STEEL SPECIFICATIONS.



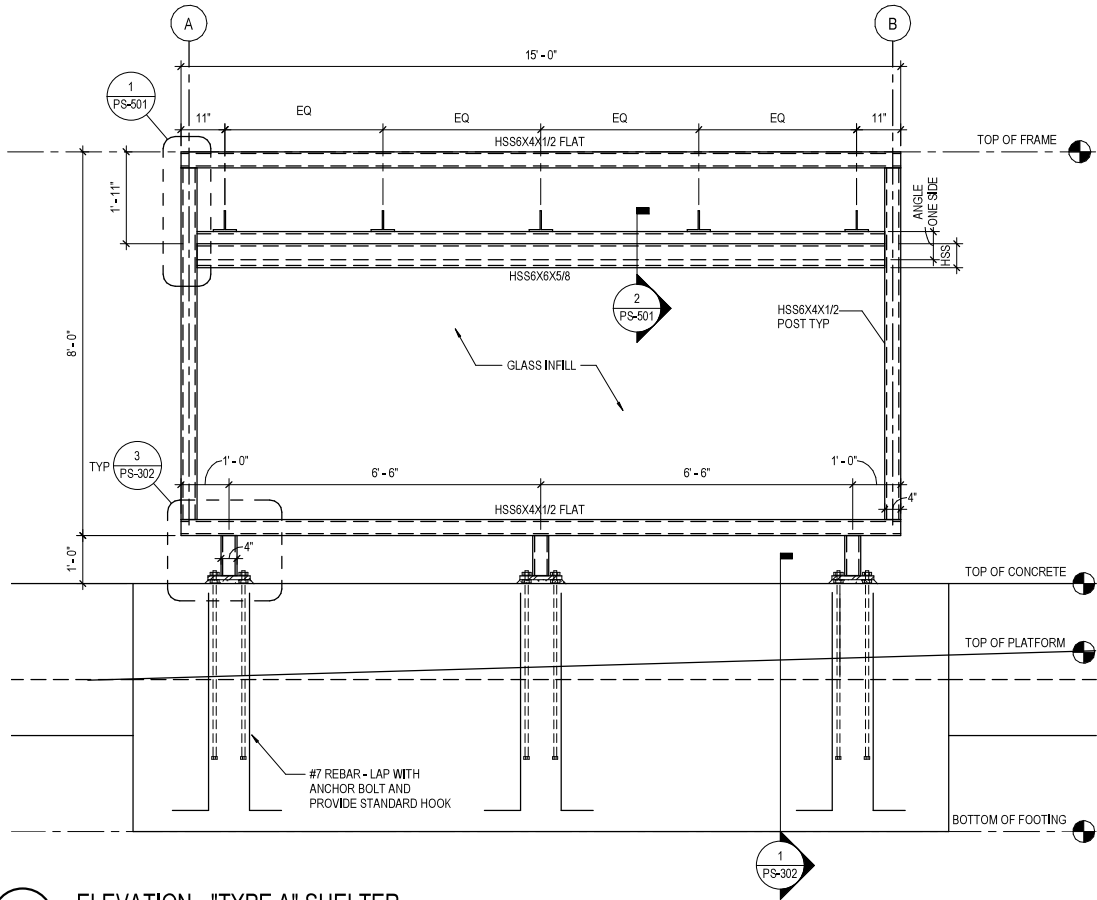
1 FOUNDATION PLAN - "TYPE B" SHELTER
3/16" = 1'-0"

REV	DATE	DESCRIPTION	DESIGNED BY	VC			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION "TYPE B" SHELTER - FOUNDATION AND FRAMING PLANS	SCALE FOR 22"x34": AS SHOWN FILENAME:
			CHECKED BY	NPK			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			CONTRACT NO.:
			DRAWN BY	NPK						CONTRACT NO. ***
			CHECKED BY	VC						VOLUME:
			APPROVED BY	NKS						DRAWING NO.:
										SHEET NO.:
PLOT DATE: 12/21/2022			DATE: 12-23-2022		NOT FOR CONSTRUCTION			PS102	200	

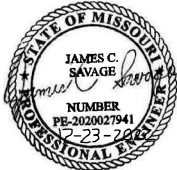
- SHEET NOTES:**
1. ALL EXPOSED STEEL SHALL BE HOT DIP GALVANIZED.
 2. ALL STEEL ON THIS SHEET SHALL COMPLY TO AESS - ARCHITECTURALLY EXPOSED STRUCTURAL STEEL SPECIFICATIONS.



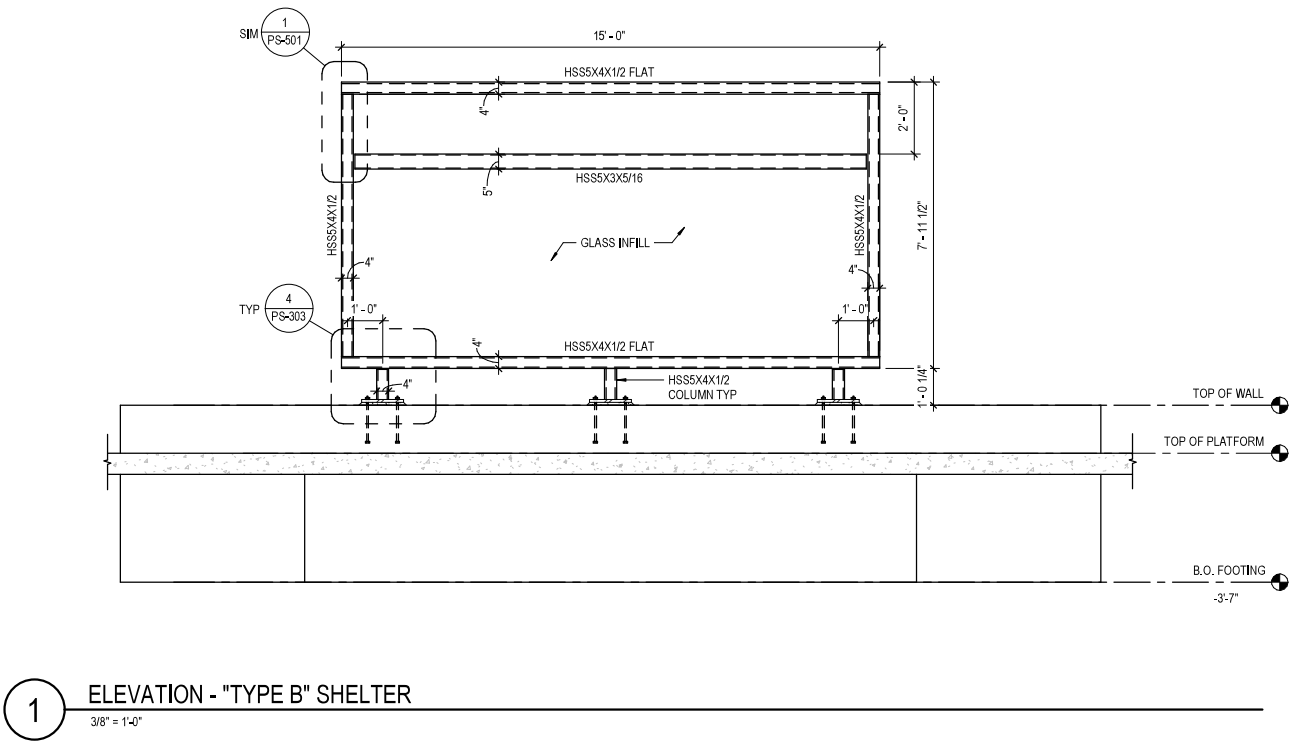
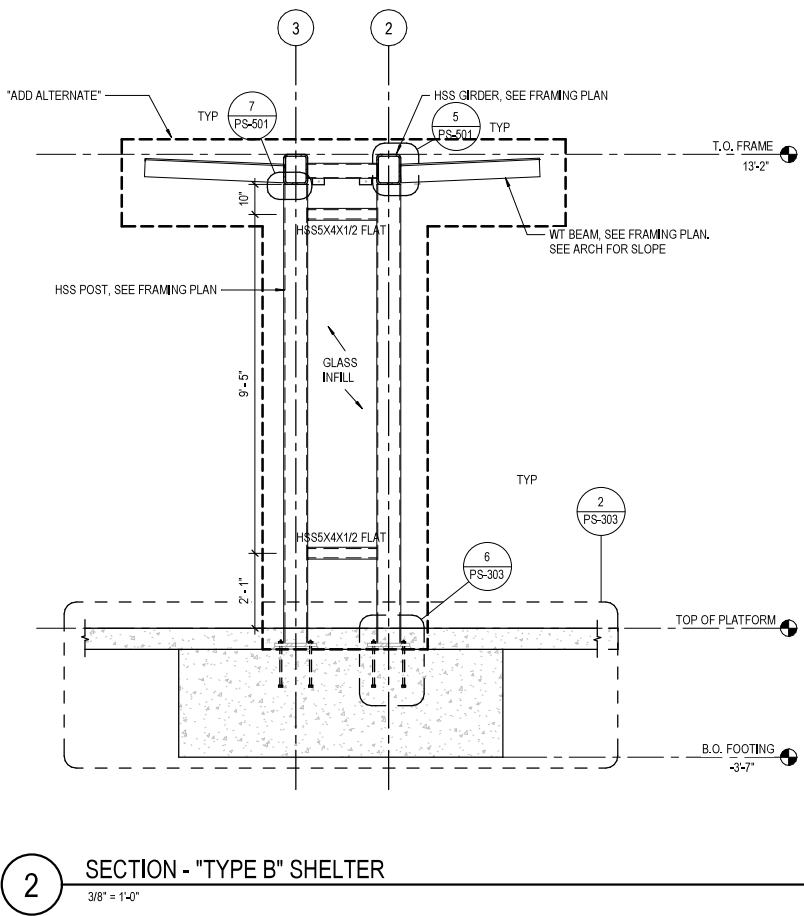
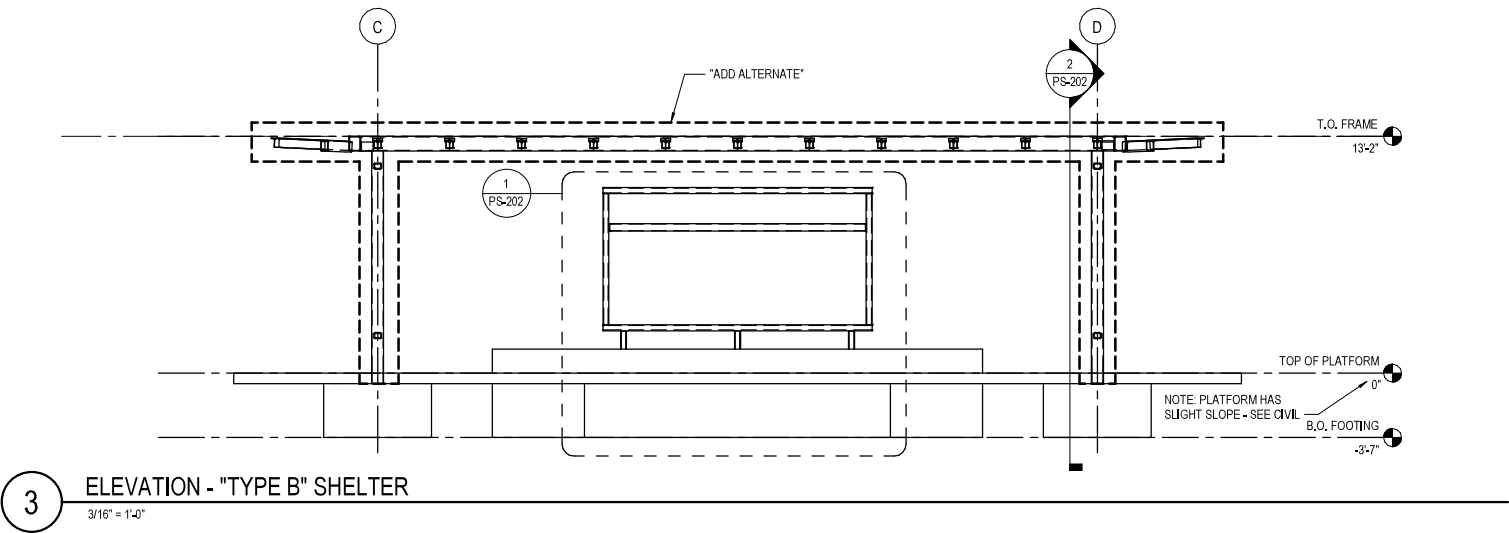
2 TYPICAL MARKER ELEVATION
3/8" = 1'-0"



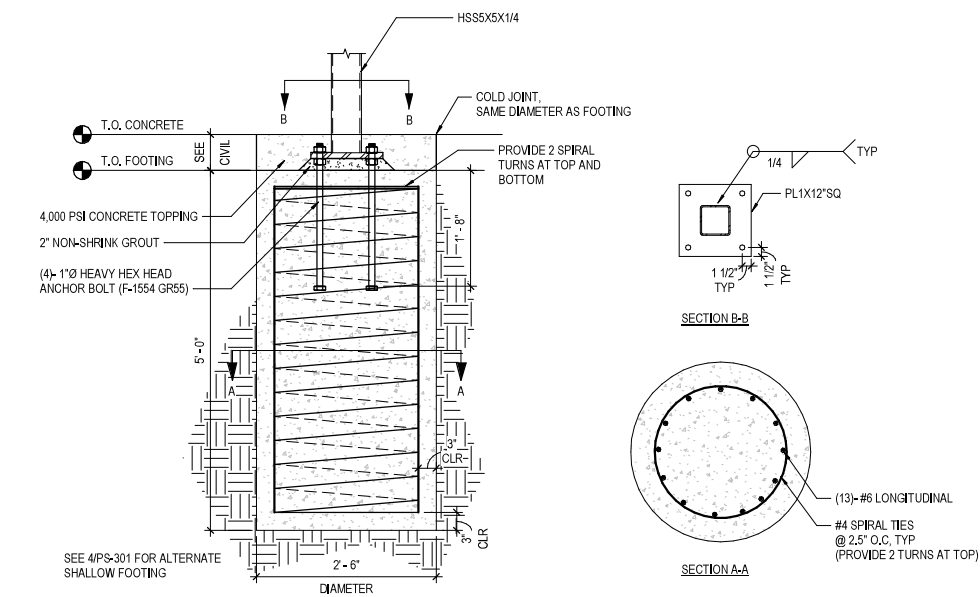
1 ELEVATION - "TYPE A" SHELTER
1/2" = 1'-0"

REV			DATE			DESCRIPTION			DESIGNED BY VC					ISSUED FOR BID			DATE: 12-23-2022			KANSAS CITY STREETCAR - RIVERFRONT EXTENSION			SCALE FOR 22"x34": AS SHOWN FILENAME:		
									CHECKED BY NPK					 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			"TYPE A" SHELTER - SECTIONS AND ELEVATIONS						CONTRACT NO.: CONTRACT NO. ***		
									DRAWN BY NPK														VOLUME:		
									CHECKED BY VC														DRAWING NO.: SHEET NO.:		
									APPROVED BY NKS														PS201 201		
PLOT DATE: 12/21/2022			11:11:06 PM			DATE 12-23-2022						NOT FOR CONSTRUCTION													

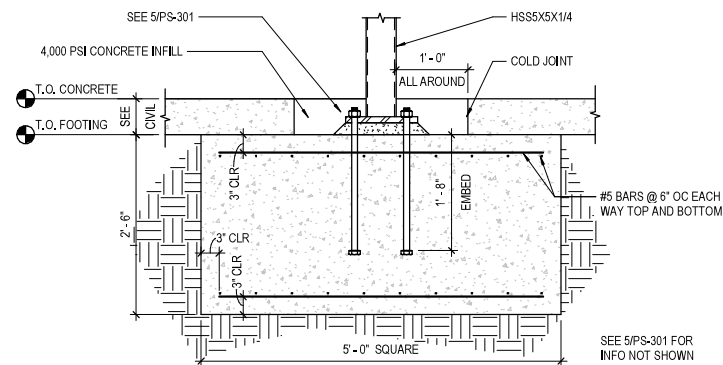
- SHEET NOTES:**
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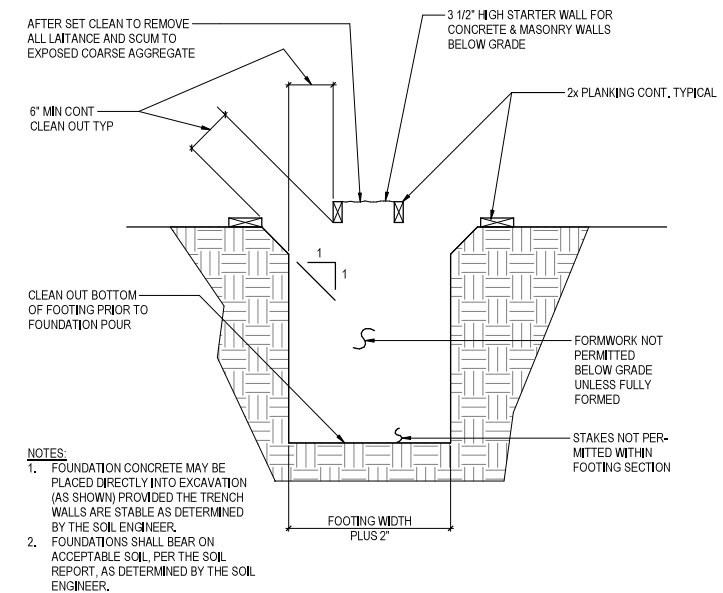
REV DATE DESCRIPTION			DESIGNED BY VC				ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": AS SHOWN FILENAME:	
			CHECKED BY NPK				HDR HDR Engineering, Inc.			CONTRACT NO.: CONTRACT NO. ***	
			DRAWN BY NPK				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			VOLUME: I	
			CHECKED BY VC				NOT FOR CONSTRUCTION			DRAWING NO.: PS202	
			APPROVED BY NKS							SHEET NO.: 202	
PLOT DATE: 12/21/2022 11:11:08 PM			DATE 12-23-2022								



5 MARKER FOOTING
3/4" = 1'-0"



4 MARKER FOOTING - ALTERNATE SHALLOW FOOTING
3/4" = 1'-0"



2 TYPICAL FOOTING FORMING DETAIL
3/4" = 1'-0"

HOOK LENGTHS (DEVELOPMENT LENGTHS, Ldh)										
Concrete	Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11
NWT	Cover	6	7	8	10	12	13	15	17	19
4,000 psi	Other Cover	7	9	12	14	17	19	21	24	27

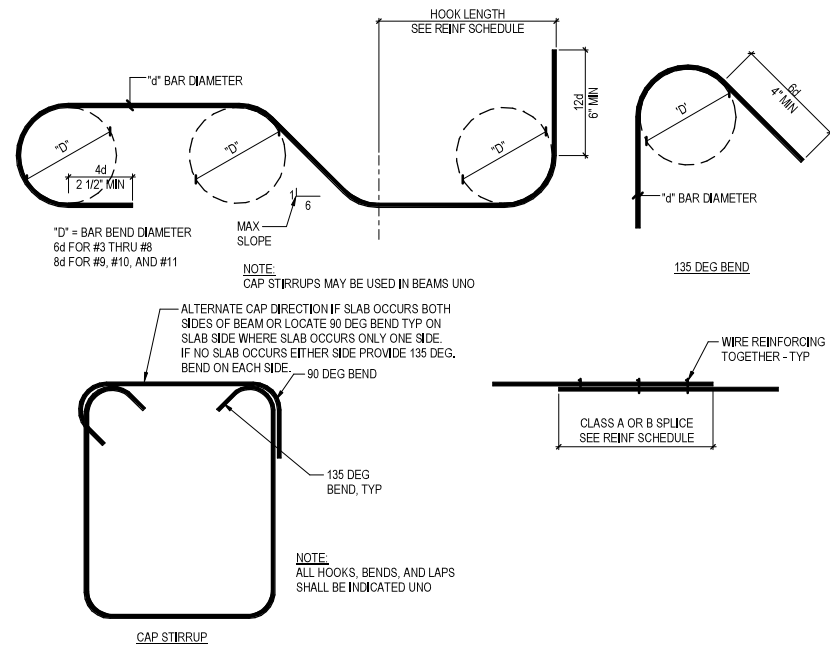
- NOTES:
1. ALL LENGTHS ARE IN INCHES.
 2. COVER BARS ARE BARS WITH AT LEAST 2 1/2 IN OF SIDE COVER TO HOOK AND 2 IN OF COVER BEYOND HOOK EXTENSION (TAIL).
 3. REFER TO ACI 318-14.

3 TYPICAL REINFORCING SCHEDULE
1 1/2" = 1'-0"

CLASS A SPLICE LENGTHS (DEVELOPMENT LENGTHS, Ld)										
Concrete	Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11
NWT	Top Bar	18	25	31	37	54	62	70	78	87
4,000 psi	Other Bar	14	19	24	28	42	47	54	60	67

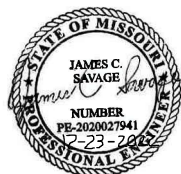
CLASS B SPLICE LENGTHS (TENSION LAP LENGTHS, Lst = 1.3Ld)										
Concrete	Bar Size	#3	#4	#5	#6	#7	#8	#9	#10	#11
NWT	Top Bar	24	32	40	48	70	80	90	102	113
4,000 psi	Other Bar	18	25	31	37	54	62	70	78	87

- NOTES:
1. ALL LENGTHS ARE IN INCHES, FOR EPOXY COATED MULTIPLY VALUES BY 1.5 TIMES.
 2. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE BELOW THEM.
 3. WALL BARS ARE NOT CONSIDERED TOP BARS.
 4. USE CLASS B SPLICES TYPICALLY, UNO.
 5. REFER TO ACI 318-14.



1 TYPICAL REINFORCING CONFIGURATION
1/2" = 1'-0"

REV	DATE	DESCRIPTION	DESIGNED BY	VC
			CHECKED BY	NPK
			DRAWN BY	NPK
			CHECKED BY	VC
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12-23-2022

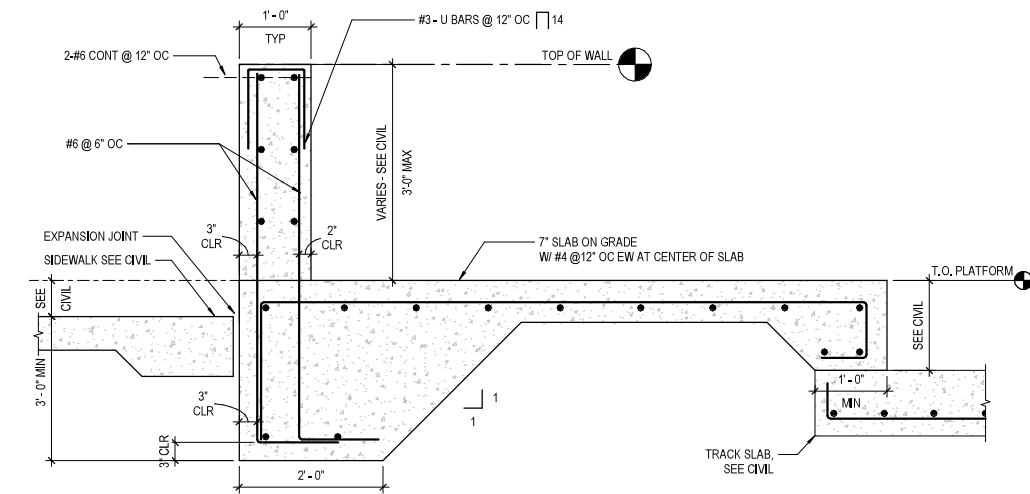


ISSUED FOR BID		DATE: 12-23-2022
HDR		HDR Engineering, Inc.
10450 Holmes Road		Suite 600
Kansas City, MO 64131-3471		816-360-2700
Certificate of Authority: 000856		
NOT FOR CONSTRUCTION		

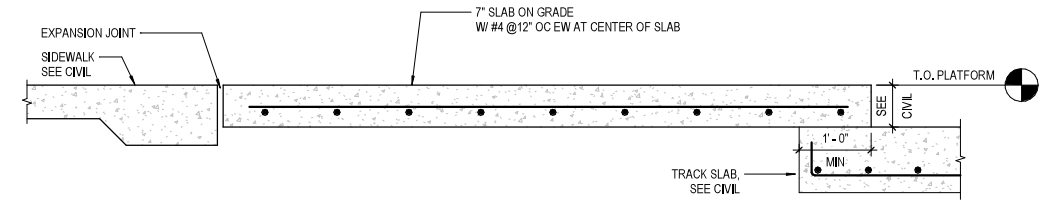
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TYPICAL CONCRETE DETAILS

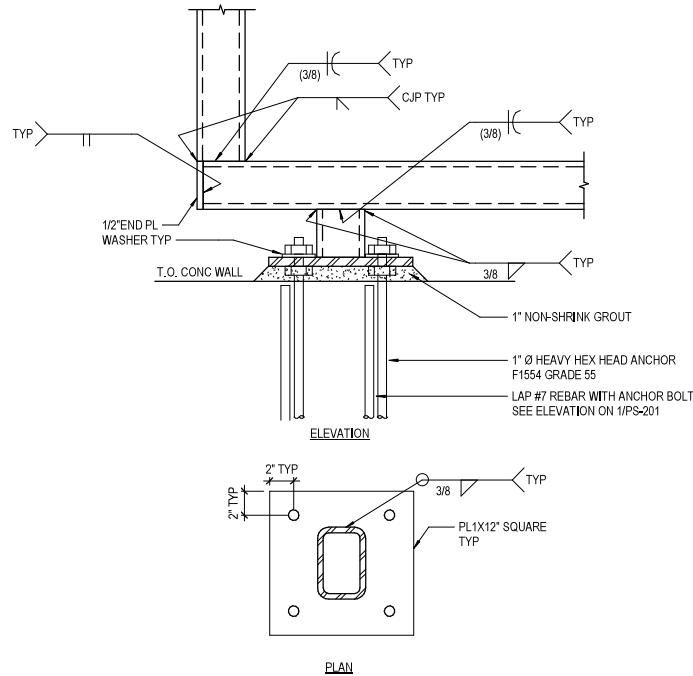
SCALE FOR 22"x34": AS SHOWN FILENAME:	
CONTRACT NO.: CONTRACT NO. *** VOLUME:	
DRAWING NO.: PS301	SHEET NO.: 203



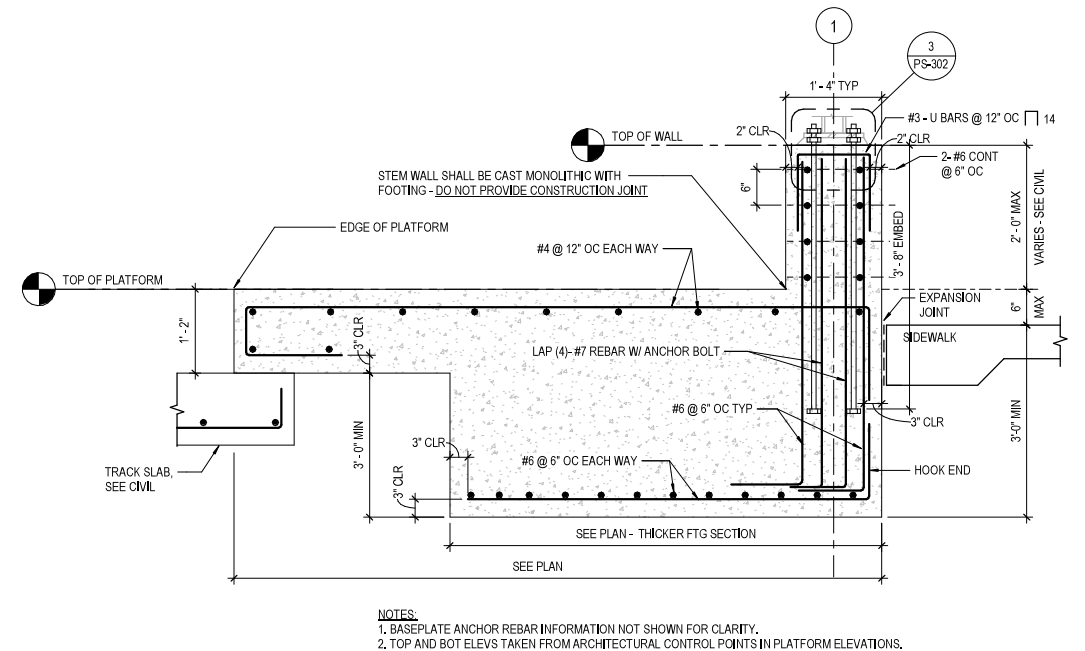
4 "TYPE A" PLATFORM SECTION WITH CONCRETE WALL
3/4" = 1'-0"



2 "TYPE A" PLATFORM SECTION WITHOUT CONCRETE WALL
3/4" = 1'-0"

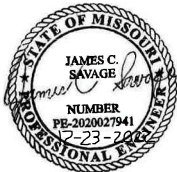


3 "TYPE A" SHELTER POST TO BASEPLATE CONNECTION
1 1/2" = 1'-0"

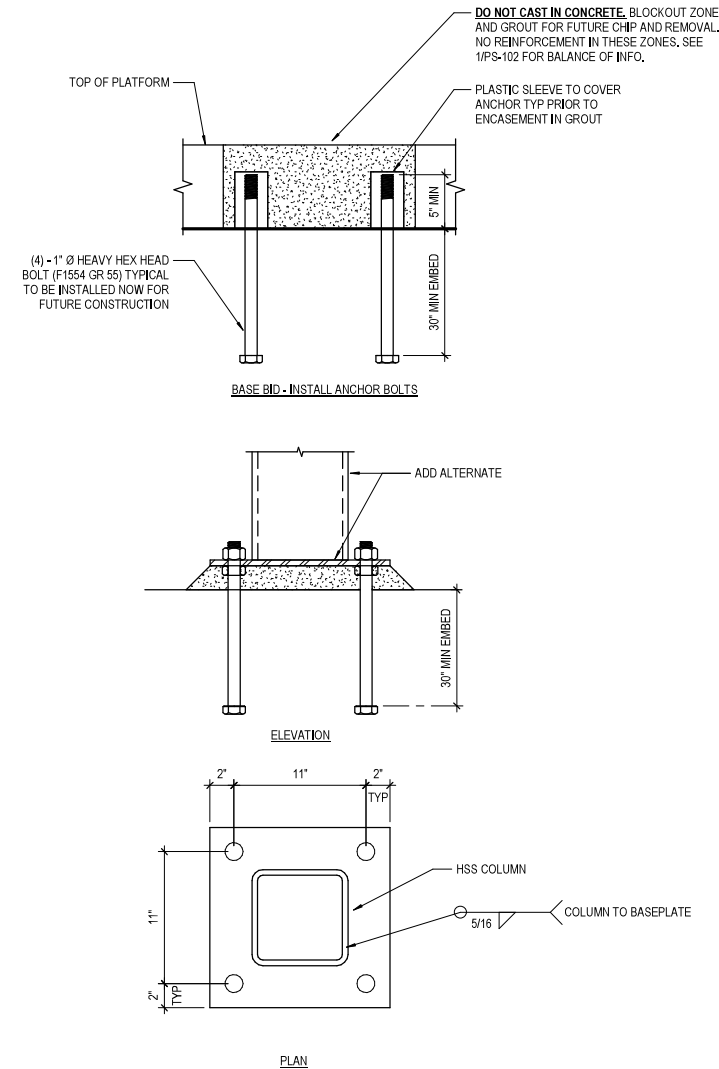


1 "TYPE A" FOUNDATION REINFORCING
3/4" = 1'-0"

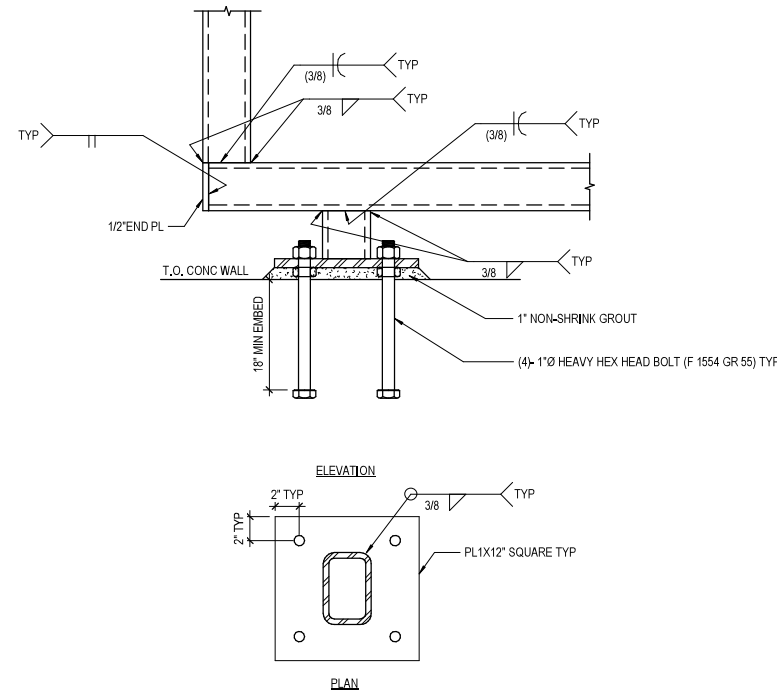
REV	DATE	DESCRIPTION	DESIGNED BY	VC	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": AS SHOWN FILENAME:
			CHECKED BY	NPK				CONTRACT NO.:
			DRAWN BY	NPK				CONTRACT NO. ***
			CHECKED BY	VC				VOLUME:
			APPROVED BY	NKS				DRAWING NO.:
								SHEET NO.:
PLOT DATE: 12/21/2022			DATE: 12-23-2022		NOT FOR CONSTRUCTION			PS302 204



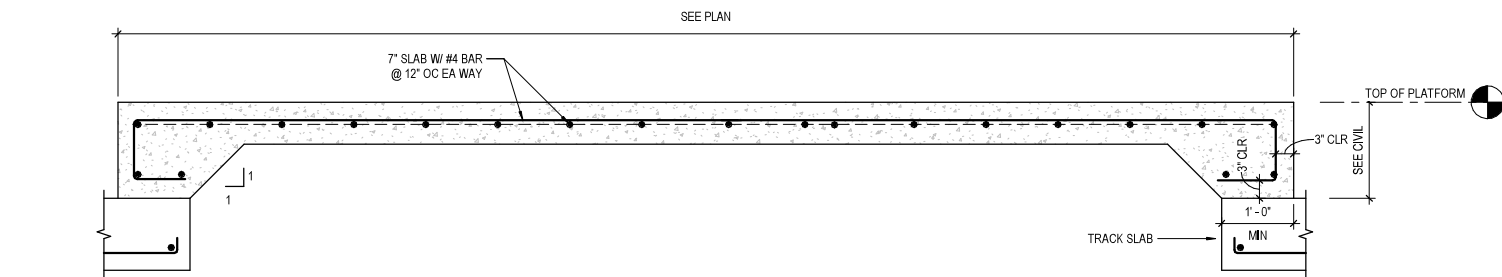
"TYPE A" SHELTER CONCRETE DETAILS



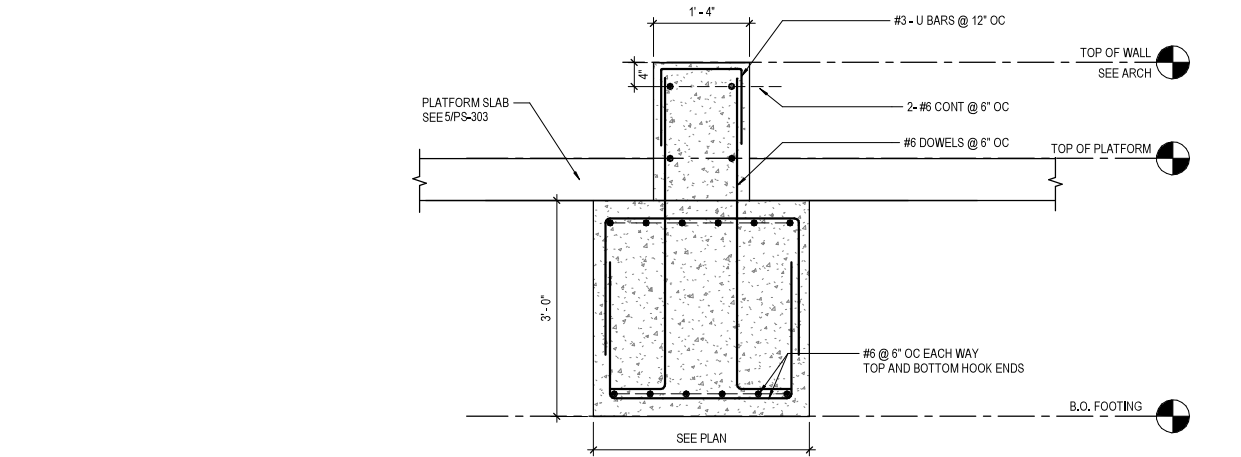
6 "TYPE B" SHELTER ANCHORAGE
1 1/2" = 1'-0"



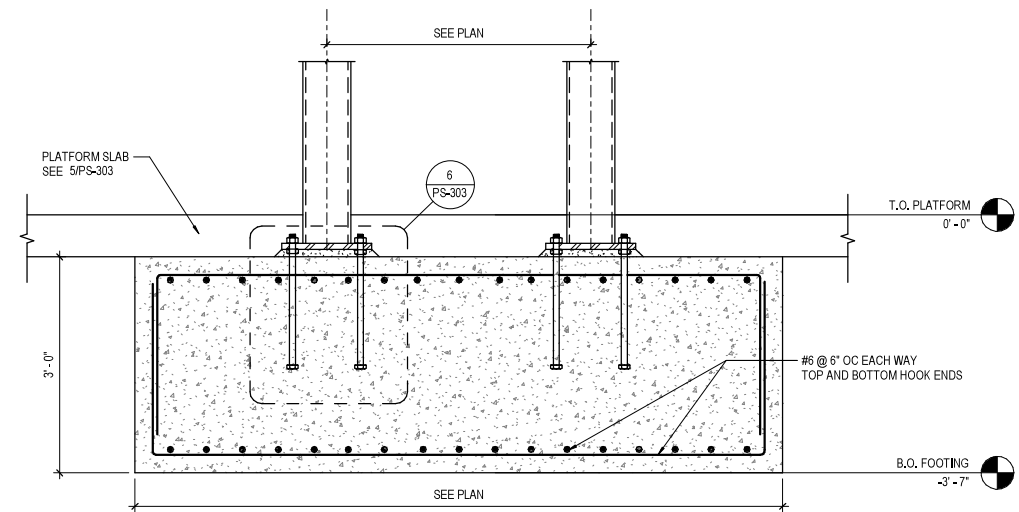
4 "TYPE 1" FRAME POST TO BASE PLATE CONNECTION
1 1/2" = 1'-0"



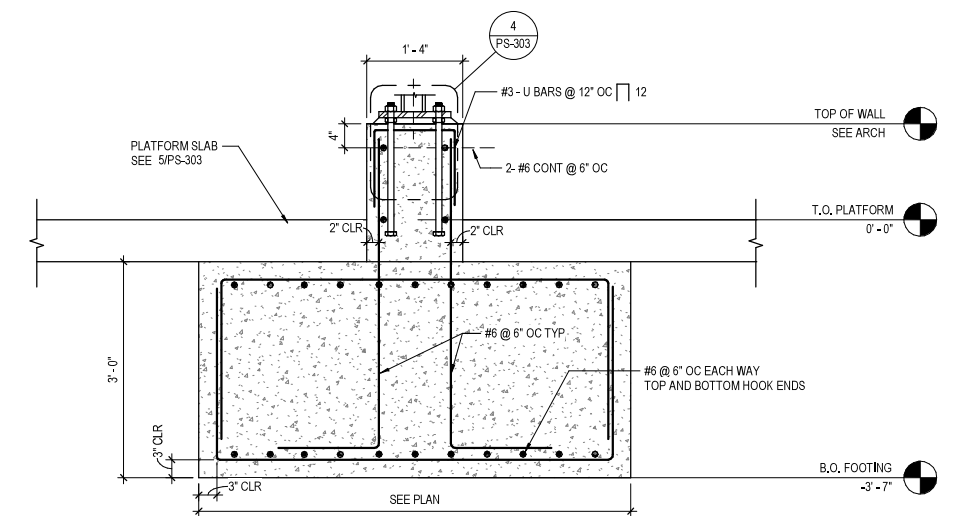
5 PLATFORM SLAB SECTION
3/4" = 1'-0"



3 FOUNDATION AT FRAME / BENCH
3/4" = 1'-0"

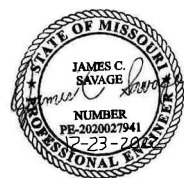


2 "TYPE B" SHELTER FOOTING
3/4" = 1'-0"



1 "TYPE 1" FRAME FOOTING
3/4" = 1'-0"

REV	DATE	DESCRIPTION	DESIGNED BY	VC
			CHECKED BY	NPK
			DRAWN BY	NPK
			CHECKED BY	VC
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12-23-2022

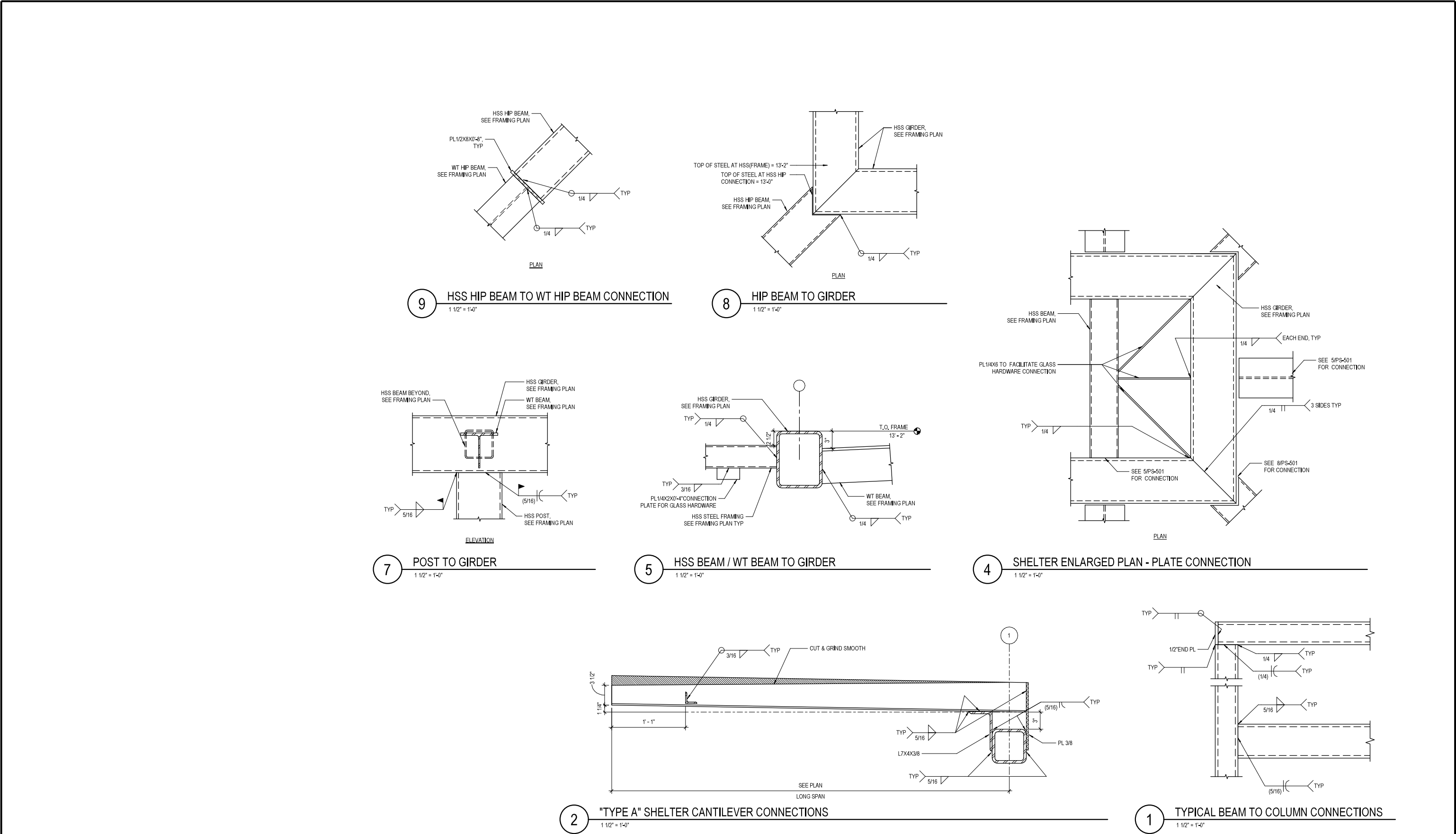


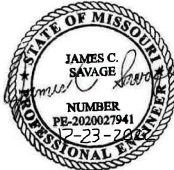
ISSUED FOR BID		DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		
NOT FOR CONSTRUCTION		

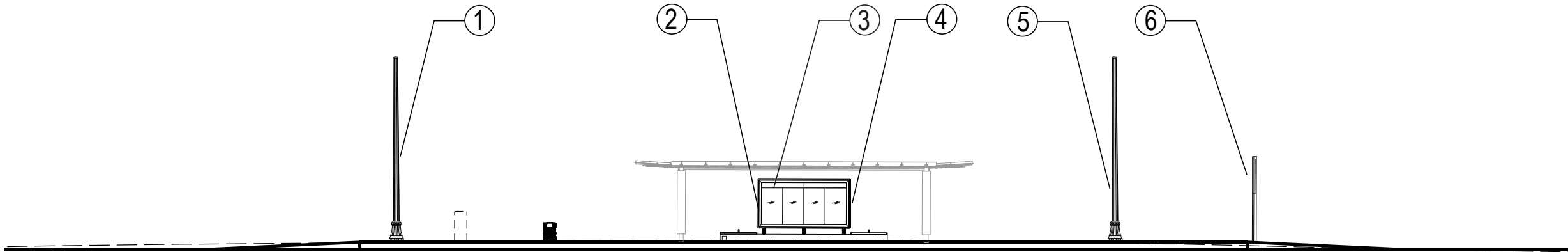
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

"TYPE B" SHELTER CONCRETE DETAILS

SCALE FOR 22"x34": AS SHOWN FILENAME:	
CONTRACT NO.:	CONTRACT NO. ***
VOLUME:	
DRAWING NO.:	SHEET NO.:
PS303	205



REV	DATE	DESCRIPTION	DESIGNED BY	VC			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TYPICAL STEEL SECTIONS AND DETAILS	SCALE FOR 22"x34": AS SHOWN FILENAME:				
			CHECKED BY	NPK											
			DRAWN BY	NPK											
			CHECKED BY	VC											
			APPROVED BY	NKS											
PLOT DATE: 12/21/2022			DATE	12-23-2022	NOT FOR CONSTRUCTION										
										DRAWING NO.:	SHEET NO.:				
										PS501	206				

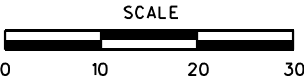


1
P502 ELEVATION: STANDARD STOP SIGNAGE RIVERFRONT

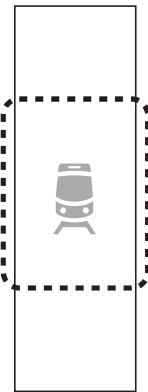
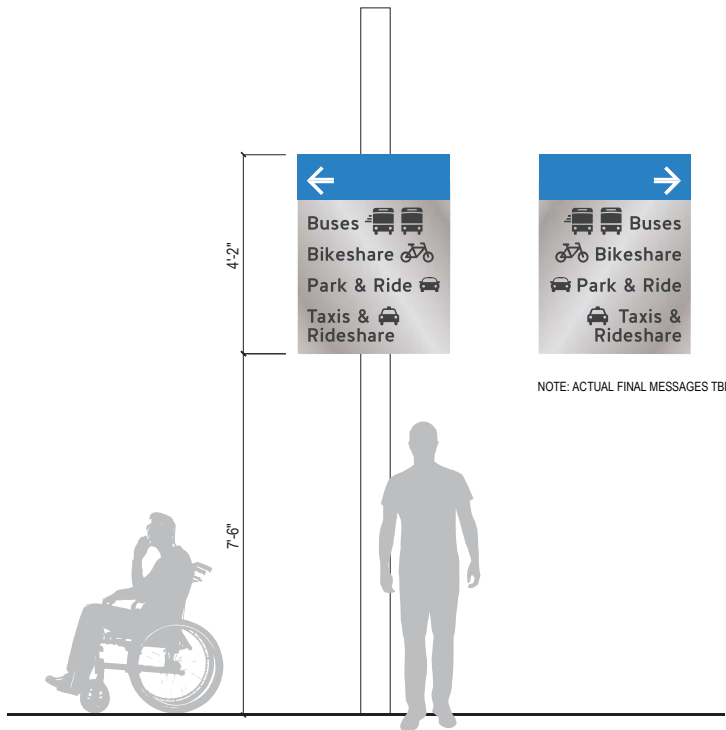
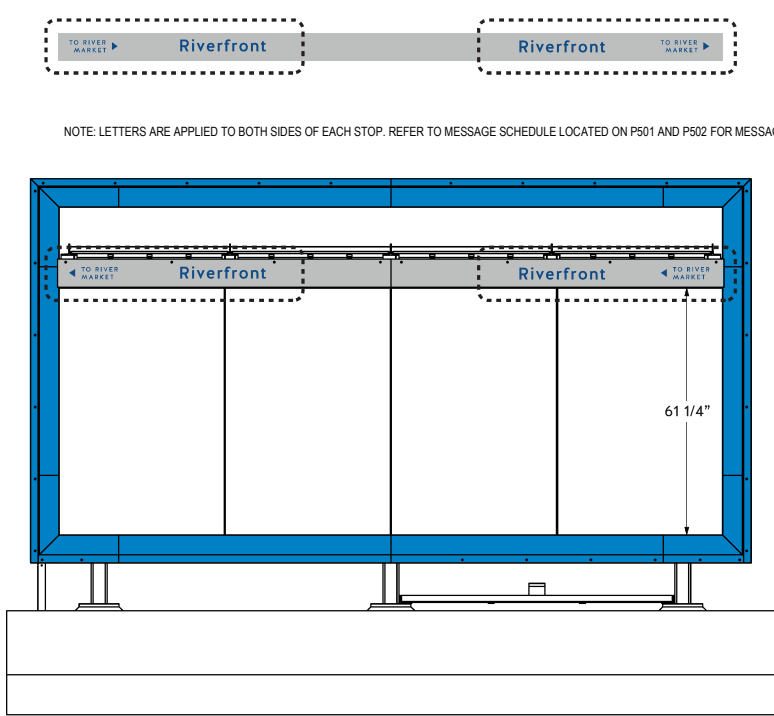
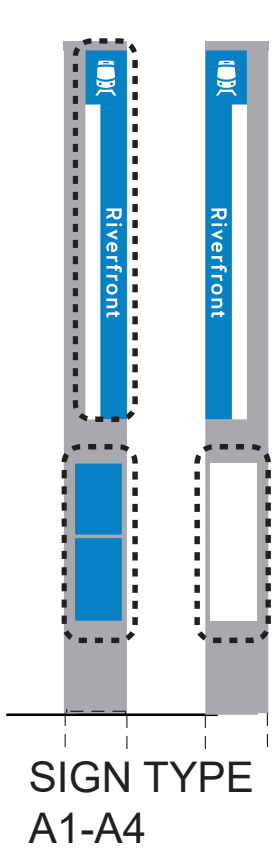
SIGN LOCATION	SIGN TYPE	SIGN MESSAGE
1	C	SEE DETAIL
2	D	SEE DETAIL
3	B	< UMKC RIVERFRONT RIVERFRONT < UMKC
	B	UMKC> RIVERFRONT RIVERFRONT UMKC >
4	D	SEE DETAIL
5	C	SEE DETAIL
6	A1-A4	A1: RIVERFRONT A2-A4: SEE DETAILS

NOTE: SIGN TYPE B IS ON BOTH SIDES OF THE "FRAME".

- GENERAL NOTES
- DO NOT SCALE DRAWINGS, IF DIMENSIONAL INFORMATION IS REQUIRED & NOT FOUND, NOTIFY ARCHITECT IMMEDIATELY FOR CLARIFICATION.
 - REFER TO DRAWINGS (SERIES P500) AND SPECIFICATIONS (SECTION 10 14 03) FOR COMPLETE INFORMATION.
 - ALL SPECIFIED MATERIALS AND METHODS SHALL BE REVIEWED FOR CONFORMANCE WITH ADA GUIDELINES. NOTIFY ARCHITECT OF ANY ITEMS THAT DO NOT CONFORM PRIOR TO FABRICATION.
 - SIGN TYPE USE FOR ALL LOCATIONS SHOWN SHALL BE CONFIRMED TO AS-BUILT CONDITIONS AND CONFIRMED WITH THE OWNER PRIOR TO PRODUCTION.
 - MESSAGE TEXT FOR ALL LOCATIONS SHOWN SHALL BE CONFIRMED TO AS-BUILT CONDITIONS AND CONFIRMED WITH THE OWNER PRIOR TO PRODUCTION.
 - COORDINATE WITH ARCHITECTURAL DETAILING IN P200 AND P300 SERIES DRAWINGS.

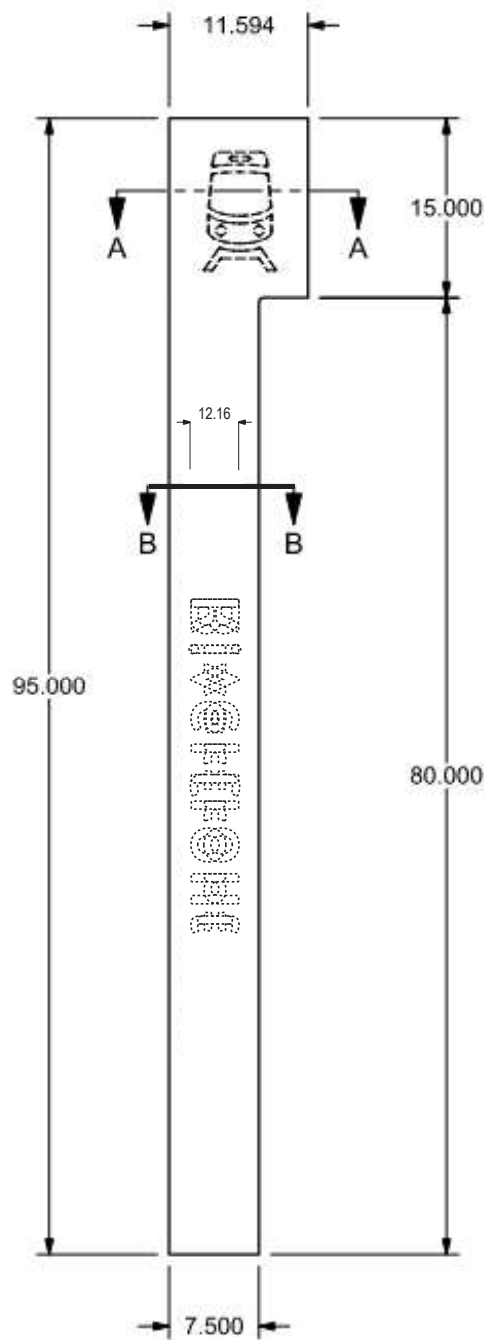


REV	DATE	DESCRIPTION	DESIGNED BY	JZ			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	"RIVERFRONT" PLATFORM SIGNAGE LOCATION ELEVATION	SCALE FOR 22"x34": 1" = 10'			
			CHECKED BY	NZ										
			DRAWN BY	JZ										
			CHECKED BY	NZ										
			APPROVED BY	NKS										
PLOT DATE: 12/21/2022			7:56:30 PM		DATE 12-23-2022		NOT FOR CONSTRUCTION				DRAWING NO.: P502			
									SHEET NO.: 208					

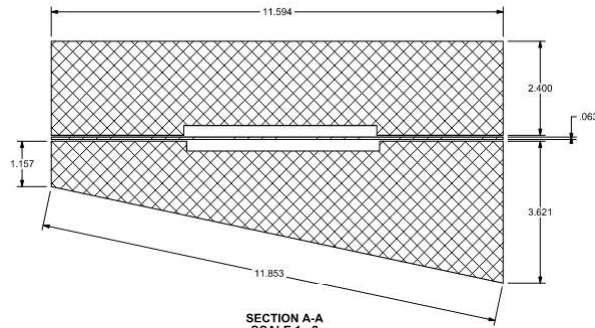


- GENERAL NOTES
- DO NOT SCALE DRAWINGS, IF DIMENSIONAL INFORMATION IS REQUIRED & NOT FOUND, NOTIFY THE ARCHITECT IMMEDIATELY FOR CLARIFICATION.
 - ORIGINAL ADOBE ILLUSTRATOR ARTWORK SHALL BE PROVIDED TO MANUFACTURERS.
 - MESSAGE TEXT FOR ALL SIGN TYPES SHALL BE COORDINATED WITH THE OWNER PRIOR TO FABRICATION.
 - MESSAGE SCHEDULE (APPENDIX 10 14 06a), LOCATION PLANS (AG SERIES), SPECIFICATIONS (SECTION 10 14 06) AND DRAWING SHEETS (AG SERIES) SHALL BE COORDINATED FOR COMPLETE INFORMATION.
 - MESSAGE SCHEDULE (APPENDIX 10 14 06a), LOCATION PLANS (AG SERIES), SPECIFICATIONS (SECTION 10 14 06) AND DRAWING SHEETS (AG SERIES) SHALL BE CONFIRMED TO AS-BUILT CONDITIONS PRIOR TO PRODUCTION.
 - ALL SPECIFIED MATERIALS AND METHODS SHALL BE REVIEWED FOR CONFORMANCE WITH ADA GUIDELINES. NOTIFY THE ARCHITECT OF ANY ITEMS THAT DO NOT CONFORM PRIOR TO FABRICATION.
 - INITIAL INSERTS TO BE PROVIDED BY THE MANUFACTURER.

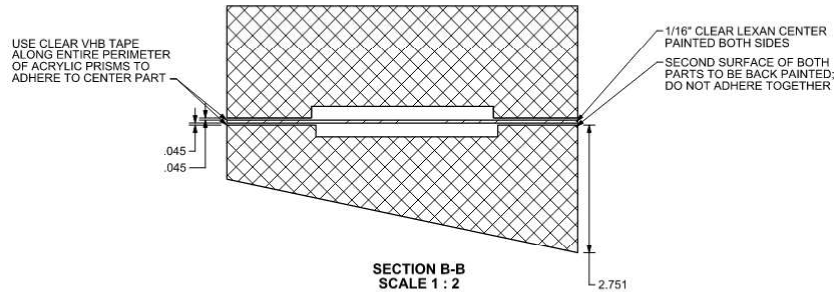
REV DATE DESCRIPTION			DESIGNED BY JZ		RideKC STREETCAR	STATE OF MISSOURI NICHOLAS K. STADEN ENGINEER NUMBER 12-23-2022 PROFESSIONAL ENGINEER 12-23-2022 NICHOLAS K. STADEN - ENGINEER LICENSE NO. 2019026072	ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY NZ						FILENAME: P503.dgn			
			DRAWN BY JZ						CONTRACT NO.: CONTRACT NO. ***			
			CHECKED BY NZ						VOLUME: I			
			APPROVED BY NKS						DRAWING NO.: P503		SHEET NO.: 209	
PLOT DATE: 12/21/2022 7:56:33 PM			DATE 12-23-2022				NOT FOR CONSTRUCTION					



FRONT VIEW

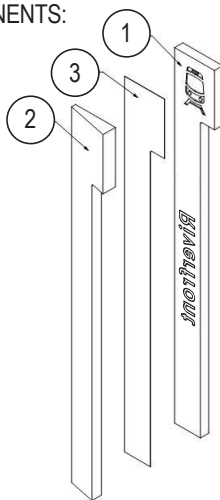


SECTION A-A
SCALE 1 : 2



SECTION B-B
SCALE 1 : 2

COMPONENTS:

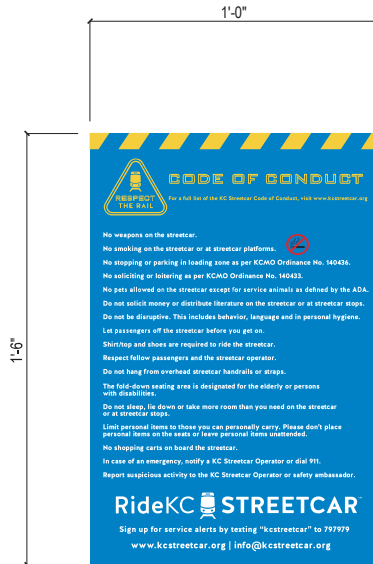


1. 2.5" CLEAR ACRYLIC
2. 4" SLEAR ACRYLIC
3. 1/16" CLEAR ACRYLIC

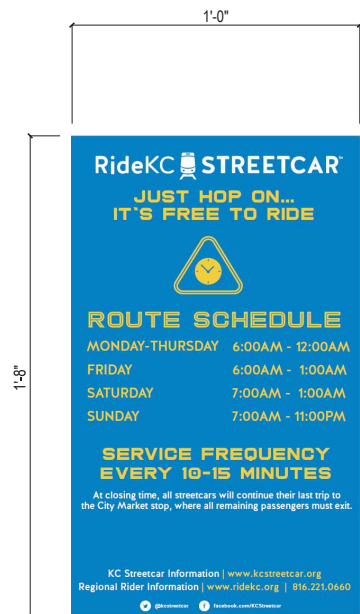
NOTE: DETAIL EXCERPTED FROM
DIMENSIONAL INNOVATIONS
SHEET N293W-01-2.00 DATED 11/8/2019

1 SIGN TYPE A1: MARKER SIGN
SCALE: 1-1/2" = 1'

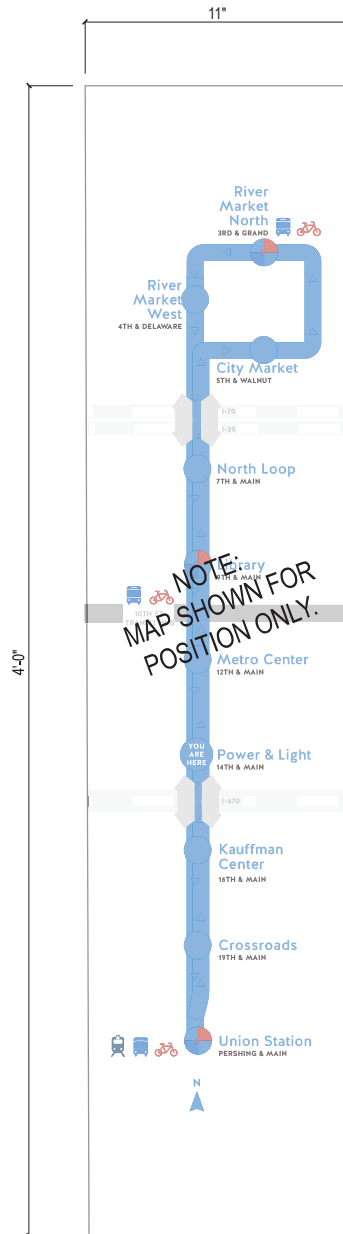
- GENERAL NOTES
- DO NOT SCALE DRAWINGS, IF DIMENSIONAL INFORMATION IS REQUIRED & NOT FOUND, NOTIFY THE ARCHITECT IMMEDIATELY FOR CLARIFICATION.
 - ORIGINAL ADOBE ILLUSTRATOR ARTWORK SHALL BE PROVIDED TO MANUFACTURERS.
 - MESSAGE TEXT FOR ALL SIGN TYPES SHALL BE COORDINATED WITH THE OWNER PRIOR TO FABRICATION.
 - MESSAGE SCHEDULE (APPENDIX 10 14 06a), LOCATION PLANS (AG SERIES), SPECIFICATIONS (SECTION 10 14 06) AND DRAWING SHEETS (AG SERIES) SHALL BE COORDINATED FOR COMPLETE INFORMATION.
 - MESSAGE SCHEDULE (APPENDIX 10 14 06a), LOCATION PLANS (AG SERIES), SPECIFICATIONS (SECTION 10 14 06) AND DRAWING SHEETS (AG SERIES) SHALL BE CONFIRMED TO AS-BUILT CONDITIONS PRIOR TO PRODUCTION.
 - ALL SPECIFIED MATERIALS AND METHODS SHALL BE REVIEWED FOR CONFORMANCE WITH ADA GUIDELINES. NOTIFY THE ARCHITECT OF ANY ITEMS THAT DO NOT CONFORM PRIOR TO FABRICATION.
 - INITIAL INSERTS TO BE PROVIDED BY THE MANUFACTURER.



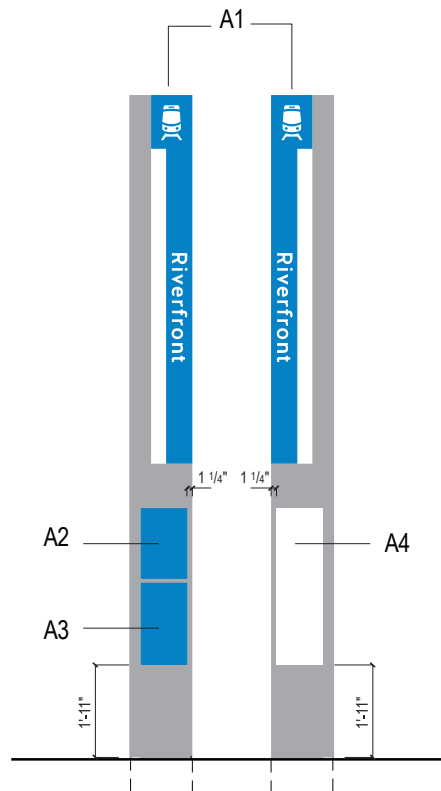
SIGN TYPE A2
MATERIAL: SCOTCHCAL DECAL
NOTE: FINAL GRAPHIC TBD



SIGN TYPE A3
MATERIAL: SCOTCHCAL DECAL
NOTE: FINAL GRAPHIC TBD



SIGN TYPE A4
MATERIAL: SCOTCHCAL DECAL
NOTE: FINAL APPROVAL OF MAP GRAPHICS
WILL BE BY THE AUTHORITY.



3 SIGN TYPES A1 - A4: MOUNTING
SCALE: 1/2" = 1'

REV	DATE	DESCRIPTION	DESIGNED BY	JZ
			CHECKED BY	NZ
			DRAWN BY	JZ
			CHECKED BY	NZ
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12-23-2022



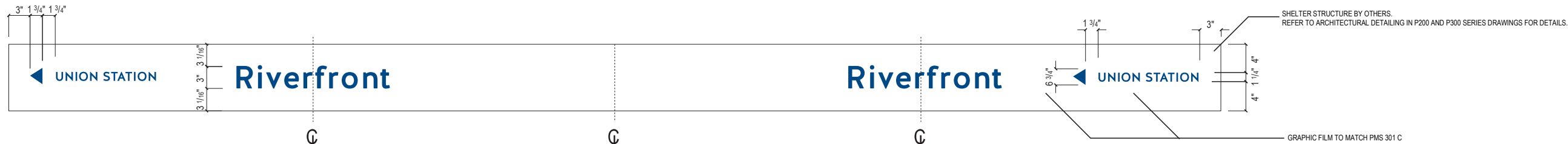
NICHOLAS K. STADEM - ENGINEER
LICENSE NO. 2019026072

ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SIGNAGE TYPES OVERVIEW

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: P504.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
P504	210

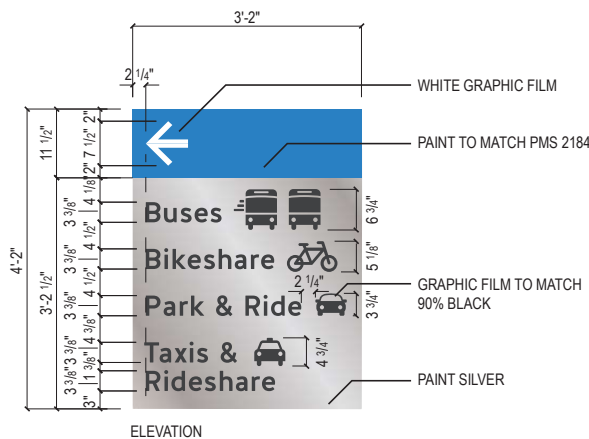
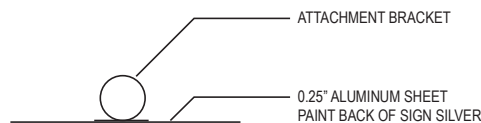


NOTE: LETTERS ARE APPLIED TO BOTH SIDES OF EACH STOP. REFER TO MESSAGE SCHEDULE FOR MESSAGES.

1 SIGN TYPE B: SHELTER SIGNS
SCALE: 1-1/2" = 1'



ATTACHMENT BRACKET ISOMETRIC VIEW



ALTERNATE LAYOUT:



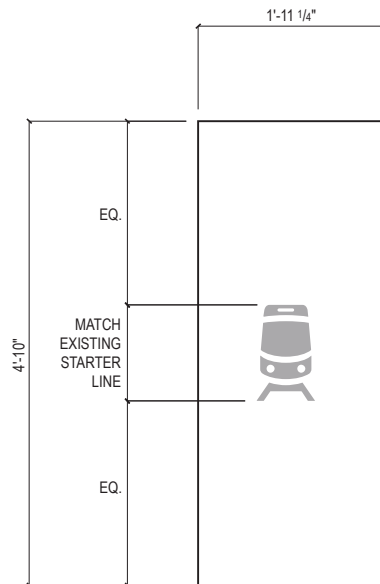
NOTE: ACTUAL FINAL MESSAGES TBD

2 SIGN TYPE C
SCALE: 3/4" = 1'



MATERIAL: SCOTCHCAL DECAL
NOTE: FINAL GRAPHIC TBD

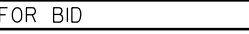
3 SIGN TYPE D
SCALE: 3" = 1'



MATERIAL: 3M DUSTED CRYSTAL GRAPHIC FILM,
SECOND SURFACE

4 SIGN TYPE E
SCALE: 3/4" = 1'

- GENERAL NOTES
- DO NOT SCALE DRAWINGS, IF DIMENSIONAL INFORMATION IS REQUIRED & NOT FOUND, NOTIFY THE ARCHITECT IMMEDIATELY FOR CLARIFICATION.
 - ORIGINAL ADOBE ILLUSTRATOR ARTWORK SHALL BE PROVIDED TO MANUFACTURERS.
 - MESSAGE TEXT FOR ALL SIGN TYPES SHALL BE COORDINATED WITH THE OWNER PRIOR TO FABRICATION.
 - MESSAGE SCHEDULE (APPENDIX 10 14 06a), LOCATION PLANS (AG SERIES), SPECIFICATIONS (SECTION 10 14 06) AND DRAWING SHEETS (AG SERIES) SHALL BE COORDINATED FOR COMPLETE INFORMATION.
 - MESSAGE SCHEDULE (APPENDIX 10 14 06a), LOCATION PLANS (AG SERIES), SPECIFICATIONS (SECTION 10 14 06) AND DRAWING SHEETS (AG SERIES) SHALL BE CONFIRMED TO AS-BUILT CONDITIONS PRIOR TO PRODUCTION.
 - ALL SPECIFIED MATERIALS AND METHODS SHALL BE REVIEWED FOR CONFORMANCE WITH ADA GUIDELINES. NOTIFY THE ARCHITECT OF ANY ITEMS THAT DO NOT CONFORM PRIOR TO FABRICATION.
 - INITIAL INSERTS TO BE PROVIDED BY THE MANUFACTURER.

REV	DATE	DESCRIPTION	DESIGNED BY	JZ		 12-23-2022 NICHOLAS K. STADEM - ENGINEER LICENSE NO. 2019026072	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION SIGNAGE TYPES OVERVIEW	SCALE FOR 22"x34":
			CHECKED BY	NZ			NOT TO SCALE			
			DRAWN BY	JZ			FILENAME:			
			CHECKED BY	NZ			P505.dgn			
			APPROVED BY	NKS			CONTRACT NO.:			
PLOT DATE: 12/21/2022			7:56:39 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION			CONTRACT NO. ***
										VOLUME:
										1
										DRAWING NO.:
										P505
										SHEET NO.:
										211



NOTES:
MATERIAL: 1/8" ALUMINUM
PROCESS: DIRECT-PRINTED
GRAPHICS ON REFLECTIVE SHEET
HDR WILL PROVIDE DIGITAL
ARTWORK FILES

ELEVATION

1 SIGN TYPE F
SCALE: 3/4" = 1'



ELEVATION

2 SIGN TYPE G
SCALE: 3/4" = 1'

ALTERNATE LAYOUTS(NOT TO SCALE):



NOTES:
MATERIAL: 1/8" ALUMINUM
PROCESS: DIRECT-PRINTED
GRAPHICS ON REFLECTIVE SHEET
HDR WILL PROVIDE DIGITAL
ARTWORK FILES



ELEVATION

3 SIGN TYPE H
SCALE: 3/4" = 1'



ELEVATION

4 SIGN TYPE J
SCALE: 3" = 1'

NOTES:
MATERIAL: 1/8" ALUMINUM
PROCESS: DIRECT-PRINTED
GRAPHICS ON REFLECTIVE SHEET
HDR WILL PROVIDE DIGITAL
ARTWORK FILES



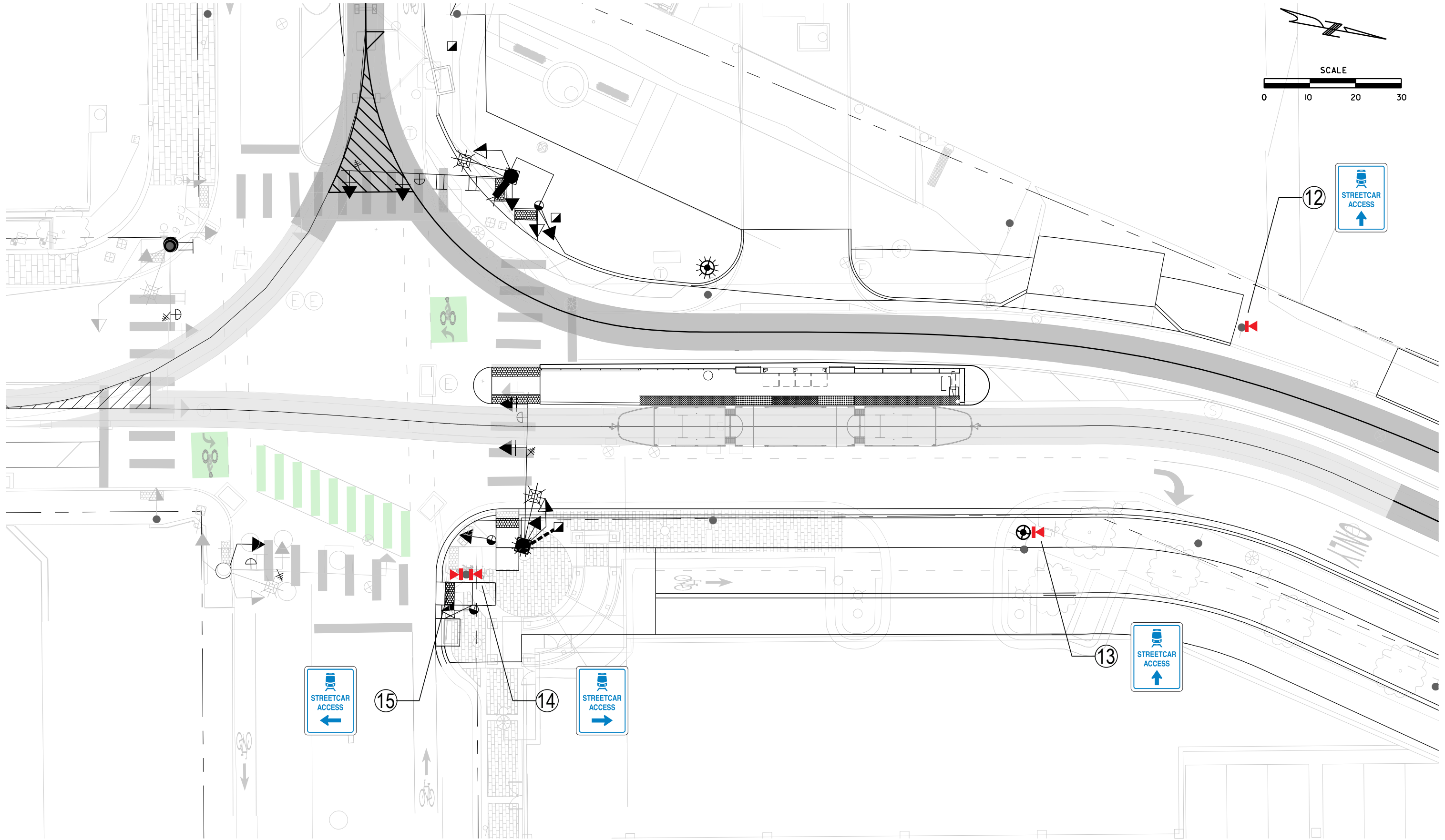
ELEVATION

5 SIGN TYPE K
SCALE: 3/4" = 1'

NOTES:
MATERIAL: 1/8" ALUMINUM
PROCESS: DIRECT-PRINTED
GRAPHICS ON REFLECTIVE SHEET
HDR WILL PROVIDE DIGITAL
ARTWORK FILES

- GENERAL NOTES
- DO NOT SCALE DRAWINGS, IF DIMENSIONAL INFORMATION IS REQUIRED & NOT FOUND, NOTIFY THE ARCHITECT IMMEDIATELY FOR CLARIFICATION.
 - ORIGINAL ADOBE ILLUSTRATOR ARTWORK SHALL BE PROVIDED TO MANUFACTURERS.
 - MESSAGE TEXT FOR ALL SIGN TYPES SHALL BE COORDINATED WITH THE OWNER PRIOR TO FABRICATION.
 - MESSAGE SCHEDULE (APPENDIX 10 14 06a), LOCATION PLANS (AG SERIES), SPECIFICATIONS (SECTION 10 14 06) AND DRAWING SHEETS (AG SERIES) SHALL BE COORDINATED FOR COMPLETE INFORMATION.
 - MESSAGE SCHEDULE (APPENDIX 10 14 06a), LOCATION PLANS (AG SERIES), SPECIFICATIONS (SECTION 10 14 06) AND DRAWING SHEETS (AG SERIES) SHALL BE CONFIRMED TO AS-BUILT CONDITIONS PRIOR TO PRODUCTION.
 - ALL SPECIFIED MATERIALS AND METHODS SHALL BE REVIEWED FOR CONFORMANCE WITH ADA GUIDELINES. NOTIFY THE ARCHITECT OF ANY ITEMS THAT DO NOT CONFORM PRIOR TO FABRICATION.
 - INITIAL INSERTS TO BE PROVIDED BY THE MANUFACTURER.

REV	DATE	DESCRIPTION	DESIGNED BY	JZ			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: P506.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.:			
			CHECKED BY	NZ									
			DRAWN BY	JZ									
			CHECKED BY	NZ									
			APPROVED BY	NKS									
PLOT DATE: 12/21/2022			7:56:41 PM		DATE 12-23-2022		NOT FOR CONSTRUCTION		SIGNAGE TYPES OVERVIEW				
									P506				
									212				



REV	DATE	DESCRIPTION
PLOT DATE: 12/21/2022		7:56:48 PM

DESIGNED BY	JZ
CHECKED BY	NZ
DRAWN BY	JZ
CHECKED BY	NZ
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

"RIVER MARKET NORTH"
PLATFORM WAYFINDING PLAN

SCALE FOR 22"x34": 1" = 10'	
FILENAME: P507.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.: P507	SHEET NO.: 213

GENERAL NOTES

- 1) The Contractor shall stake the locations of all poles, pull boxes, controller and other equipment. Staked locations shall be reviewed by the City Inspector for approval prior to placement of equipment.
- 2) All locations indicated in drawings, including conduit runs are subject to adjustment to clear obstructions, avoid utilities, and to meet site conditions, if any, by the City Inspector.
- 3) Work and equipment shall meet the latest edition of the City of Kansas City, Mo. specifications and the project specific technical specificaltions. Where Missouri standard specifications are referred to, it shall mean the latest edition.
- 4) Any equipment damaged during construction shall be replaced at the contractor's expense.
- 5) Combination OCS, lighting and signal poles shall have a separate 2" conduit stubbed out of the pole base for the OCS and lighting systems conductors to be installed.
- 6) All signal indications shall be 12" LEDs per ITE specifications.
- 7) All pedestrian signal indications shall be 16 inch LED countdown PED modules with walker and hand symbols. Filled indication type per ITE specifications.
- 8) All mast arm mounted signal heads shall have back plates.
- 9) Existing signals shall remain in operation until new signals are installed. Signal foundations shall be removed 2 ft below grade. All removed signal and lighting appurtenances not being reused shall be returned to the Public Works Traffic Signal Section.
- 10) All street cuts and restoration to follow City Street Cut Restoration specifications and drawing SR-1.
- 11) Standard concrete mixes, unless otherwise specified shall be:

a) Bases – MCIB air-entrained mix no. A-629-1/2-2.
- 12) All disturbed surfaces shall match the existing surface elevation.
- 13) Signal equipment shall not form an obstruction to the movement of pedestrian and wheelchair traffic. Where sidewalks are present, a minimum clear width of 48 inches shall be available for pedestrian and wheelchair movement.
- 14) Right-Of-Way limits should be cross checked by the contractor and approved by the field inspector before undertaking any excavations at the site.
- 15) Existence and location of any underground facilities shown on these drawings or reference to any soil conditions, if made, are for information only. It is the contractor's / bidder's responsibility to verify all site conditions and to locate all utilities before starting the project.
- 16) The contractor is fully responsible for any and all damages caused by failure to exactly locate and preserve all utilities.
- 17) Quantities shown are estimations based on plans. Payment will be made by measurement of actual work done.
- 18) Unless otherwise called for, luminaire arms, where used, shall be oriented parallel to signal mast arms.
- 19) Conduits may be bored under existing pavements, unless authorized otherwise by the City Inspector.
- 20) Pull boxes shall not be installed on wheelchair ramps.
- 21) Conflict monitors shall be ethernet capable and shall be provided with cables for remote access.
- 22) Accessible pedestrian signals shall meet MUTCD, PROWAG and ADA requirements. Refer to the project specific technical special provisions for additional requirements.
- 23) All traffic signal equipment and LED internally illuminated street name sign shop drawings shall be submitted to Sol Moinuddin, Public Works, and Traffic Operations at sol.moinuddin@kcmo.org, 1-816-513-9863.
- 24) All signs on signal poles and mast-arms are incidental to traffic signal installation, contractors will not be paid separately.

TRAFFIC SIGNAL GENERAL NOTES

GENERAL NOTES CONTINUED:

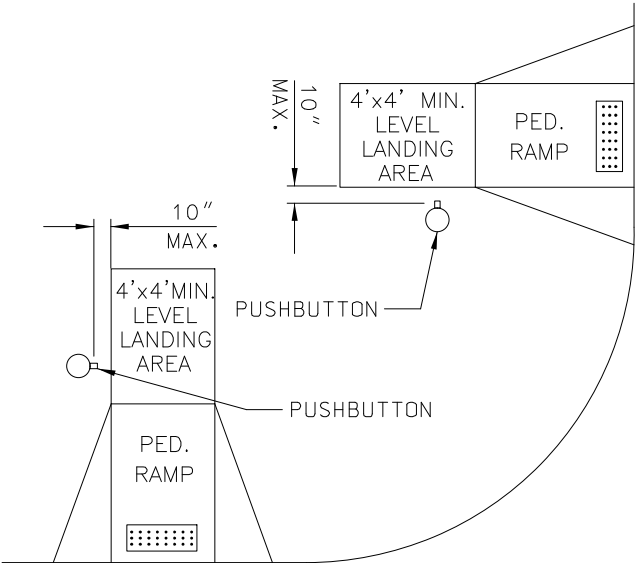
- 24) Jumper "like" heads/phases with 7c on mast arm only. A maximum of two 7-conductor jumpers are allowed between three signal heads. Use separate 7c for last head on mast arm regardless of phase.

PROJECT SPECIFIC NOTES

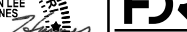
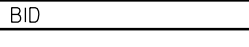
- 1) All poles, mast arms and luminaire arms shall be City standard poles, to meet the KCMO specifications at all signalized intersections. Traffic signal poles with mast arms oriented over the proposed streetcar system will require a modified installation height. Refer to sheet T201 for the various installation methods.
- 2) The Contractor shall connect fiber optic cable at all of the project intersections.
- 3) The Contractor shall coordinate with KCMO staff before installing, configuring and testing the communication equipment.
- 4) Refer to latest edition of TS500B and the project specific Technical Special Provisions for additional requirements.
- 5) Mast Arms to be Curvilinear (see detail sheet T205).
- 6) Refer to Lighting sheets for quantities and additional details. Street lighting shown in signal plans are for reference only.
- 7) Controller shall be 2070 with ASC/3 software.
- 8) CCTV cameras shall be PTZ with 360 add on camera, refer to project spifications for details.
- 9) Vehicle detection shall be Wavetronix Matrix Stop Bar detection system utilizing rail mount preassembled 19-inch rack backpanel, or approved equal. Prior to installation, perform walk-through of manufacturer/vendor confirm radar antenna placement. Refer to the project specifications for details.
- 10) Pedestrian pushbuttons shall be Polara Navigator 2-wire iNS pushbutton stations, or approved equal. Refer to the project specifications for details.
- 11) Fiber optic interface (FIP) in signal cabinet shall be Gator Patch, or approved equal. Refer to the project specifications for details.
- 12) Traffic signal cabinet shall have laptop drop down shelf on front and back doors.

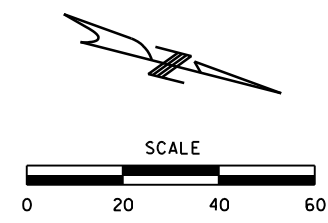
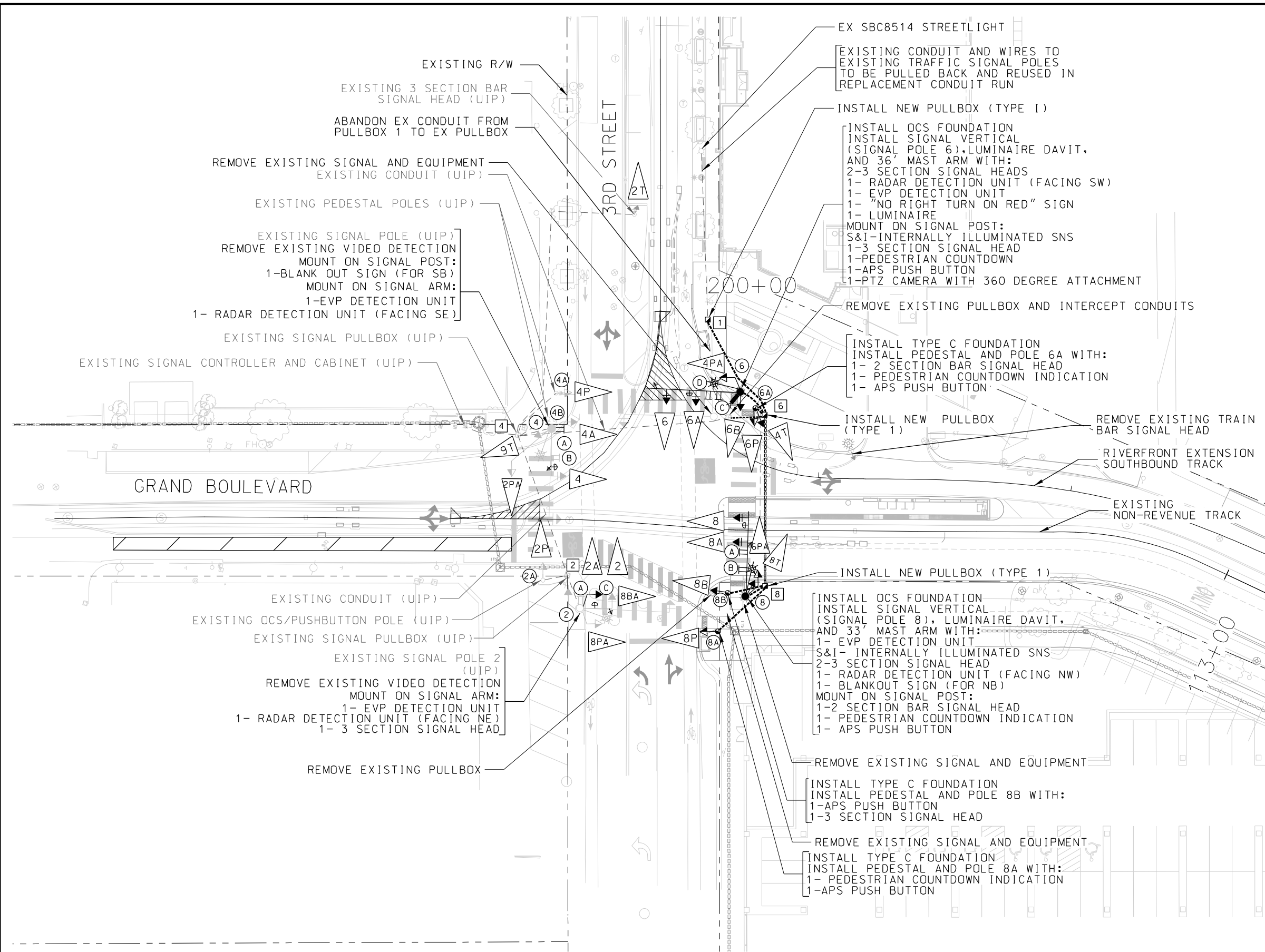
Based on potential utility conflicts: Contractor to verify final pushbutton installation location is within 10 inches maximum reach of level landing area. This may require the installation of various length mounting extensions.

In instances where pole location deems an extension unfeasable: The installation of a 42" pedestrian stub pole will be required for compliant pushbutton installation.



PUSHBUTTON INSTALLATION DETAIL

REV	DATE	DESCRIPTION	DESIGNED BY	SMA			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRAFFIC SIGNAL GENERAL NOTES	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	FILENAME: T100.dgn				
			DRAWN BY	MMO				CONTRACT NO.: CONTRACT NO. ***				
			CHECKED BY	JLH				VOLUME: I				
			APPROVED BY	NKS				DRAWING NO.: T100				
PLOT DATE: 12/23/2022			10:07:00 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION		SHEET NO.: 214			



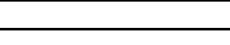
- ### INTERSECTION NOTES
1. REMOVE AND SALVAGE EXISTING SIGNAL EQUIPMENT FROM THIS SIGNAL SYSTEM, EXCEPT WHERE SHOWN AS UIP.
 2. ABANDON EXISTING SIGNAL CONDUITS, EXCEPT WHERE SHOWN AS UIP.
 3. COORDINATE WITH TRAFFIC CONTROLLER MANUFACTURER FOR TSP/EVP IN-CABINET MODULES AND LICENSES.
 4. COORDINATE WITH MID AMERICA OR OTHER SUPPLIER FOR RADAR DETECTOR INSTALLATION.
 5. APPLY BLACK COLOR COATING ON TRAFFIC SIGNAL POLE, MAST ARM TO MEET KCMO SPECIFICATIONS.

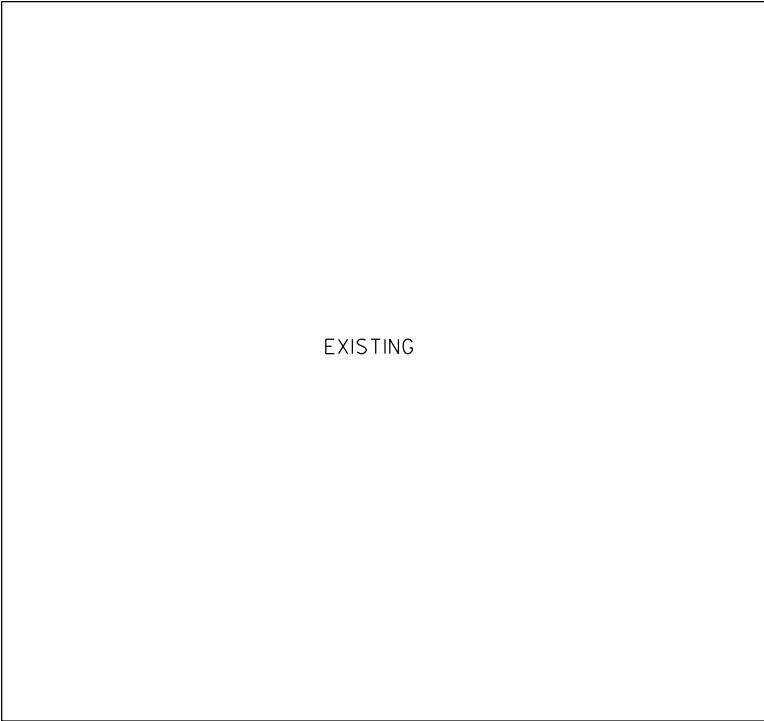
SIGNAL FACE KEY

2 (EX)	2A (EX)	4A (EX)	2P (EX)	2T (EX)	8B
4 (EX)	4A (EX)	6B, 8, 8A	2PA (EX)	9T (EX)	8BA
			4P (EX)		
			4PA		
			6P, 6PA, 8P		
			8PA (EX)		

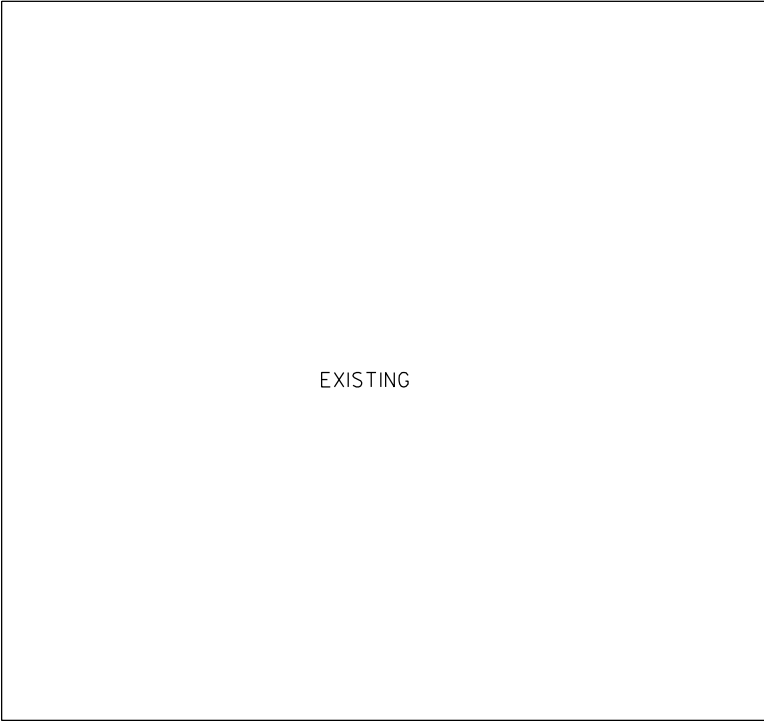
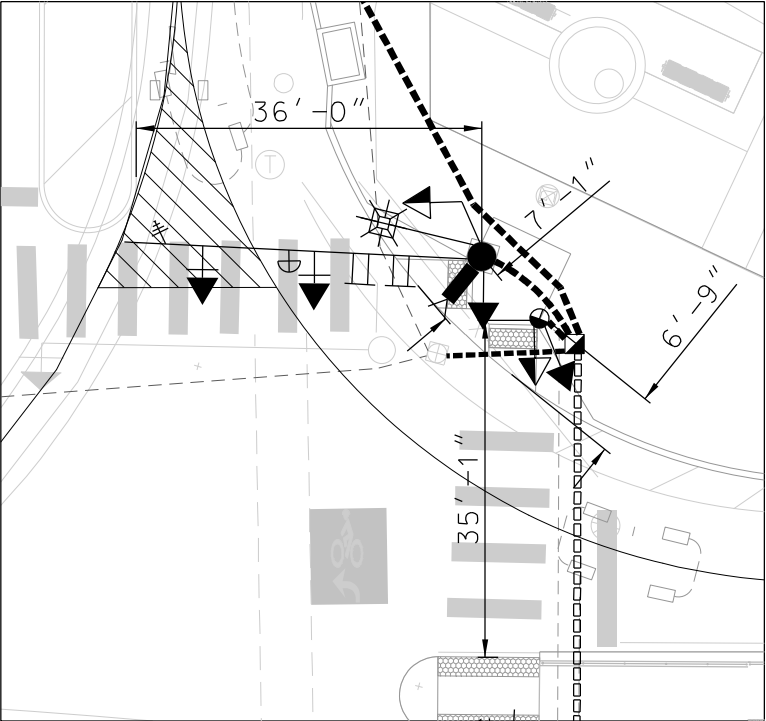
SIGN KEY

BLANKOUT SIGN (A)	3rd St (B)	Grand Blvd (C)
NO RIGHT TURN ON RED R10-11B 24"x30" (D)		

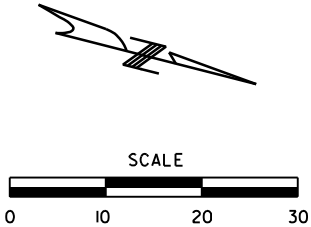
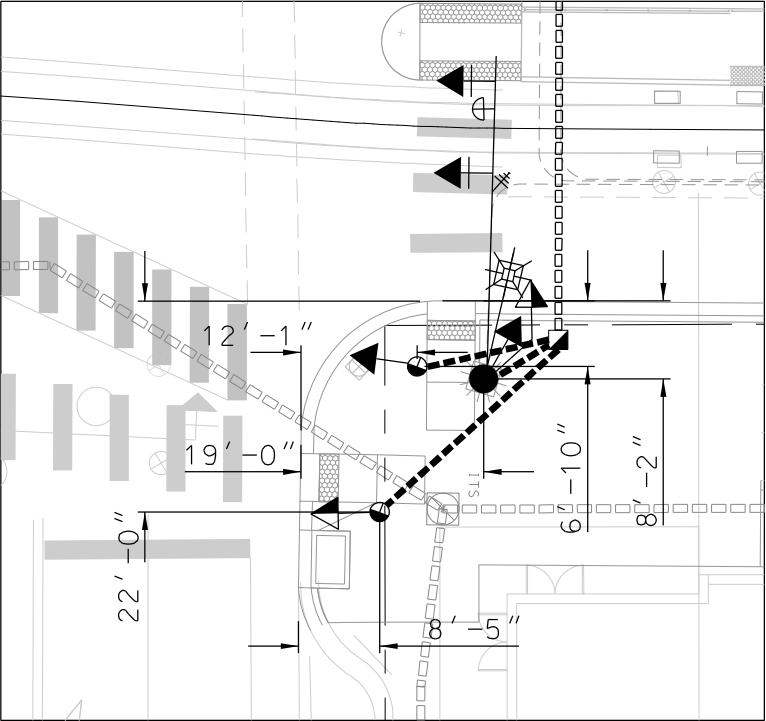
REV DATE DESCRIPTION			DESIGNED BY SMA				ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'		
			CHECKED BY JLH					10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		NOT FOR CONSTRUCTION		FILENAME: T101.dgn		
			DRAWN BY MMO									CONTRACT NO.:		
			CHECKED BY JLH									CONTRACT NO. ***		
			APPROVED BY NKS									VOLUME:		
PLOT DATE: 12/23/2022			DATE: 12-23-2022		DRAWING NO.:		SHEET NO.:							
TRAFFIC SIGNAL LAYOUT PLAN 3RD STREET AND GRAND BOULEVARD												T101 215		



EXISTING



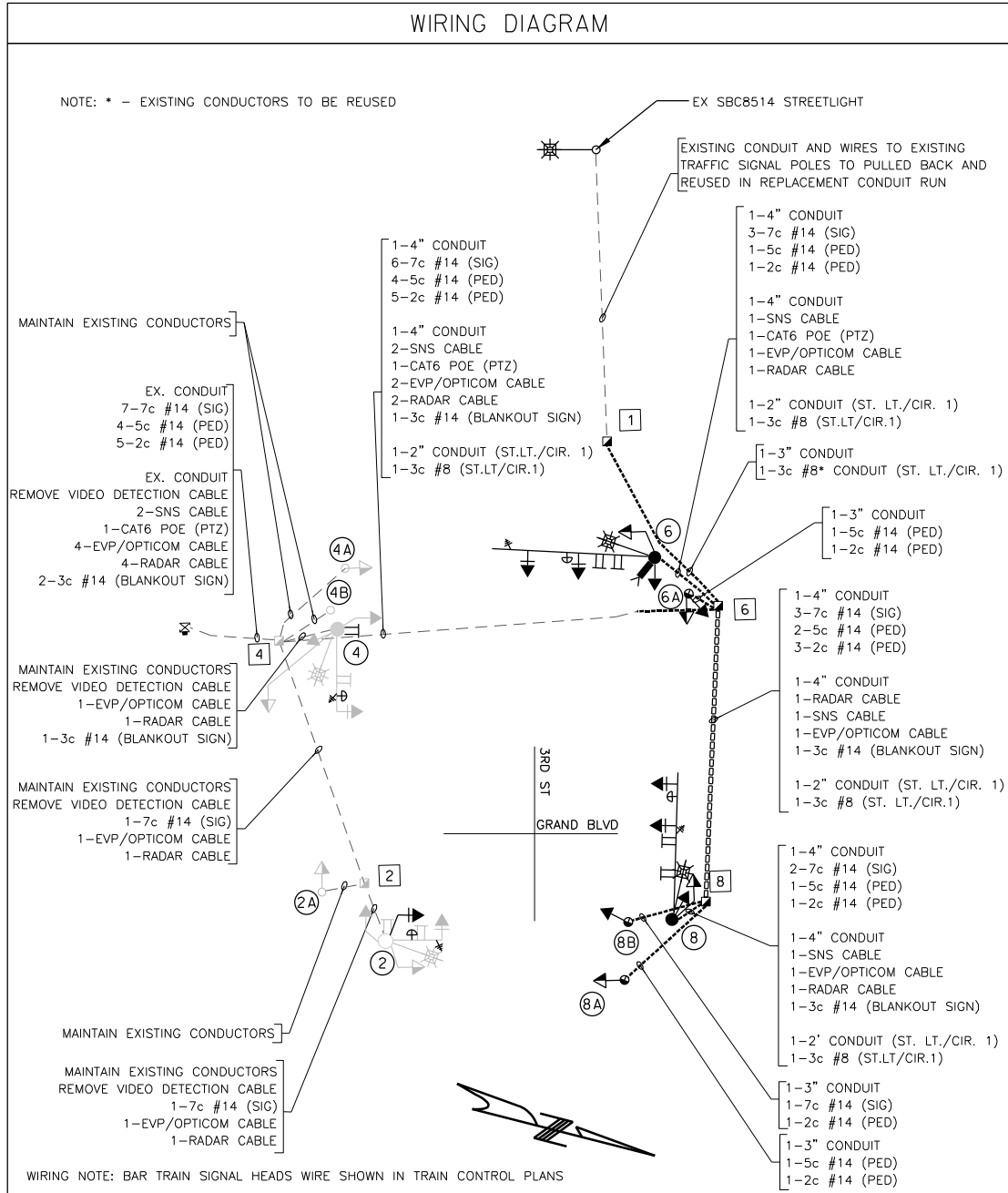
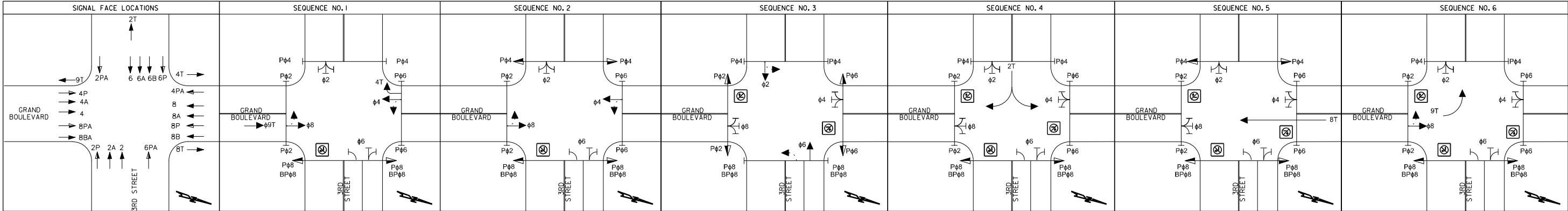
EXISTING



GENERAL NOTES

- 1. CONTRACTOR TO MODIFY THE SIGNALS AS SHOWN IN THE PLANS. MODIFICATIONS SHALL BE DONE IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
- 2. CONTRACTOR TO INSTALL NEW RADAR DETECTION EQUIPMENT.
- 3. CONTRACTOR TO INSTALL NEW APS PEDESTRIAN SIGNAL EQUIPMENT IN ACCORDANCE WITH PROWAG GUIDELINES.
- 4. ALL REMOVED SIGNAL AND LIGHTING APPURTENANCES TO BE RETURNED TO KCMO PUBLIC WORKS, TRAFFIC SIGNAL SECTION.

REV	DATE	DESCRIPTION	DESIGNED BY	SMA			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRAFFIC SIGNAL LAYOUT PLAN 3RD STREET AND GRAND BOULEVARD	SCALE FOR 22"x34": 1" = 10' FILENAME: T101A.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.:
			CHECKED BY	JLH							
			DRAWN BY	MMO							
			CHECKED BY	JLH							
			APPROVED BY	NKS							
PLOT DATE: 12/23/2022			DATE		12-23-2022		NOT FOR CONSTRUCTION				



CONTROLLER AND EQUIPMENT		TOTALS
CABINET: 332L with Auxiliary Cabinet	EX.	
CONTROLLER: Type 2070C Complete per specs, including software.	EX.	
UPGRADE CONTROLLER CPU MODULE to 2070-IC	EX.	
STREET LIGHT CONTROLLER		
CONFLICT MONITOR with Ethernet Port	EX.	
EOS or Approved EqualSoftware License	EX.	
Opticom Model764 Phase Selector	I	
Opticom Model768 Interface Panel	EX.	
Opticom Model721Receiver	4	
InstallSM24BT2DPB Network Switch	I	
Fiber Optic Patch Panel	EX.	
4-Port Radar Interface Unit	I	
REMARKS:		
1. Furnish and install.		

POWER SUPPLY				
LOCATION	Power Supply Asmb.	CIRCUIT BREAKER TRIP RATINGS(AII Two-Pole)		
		INSIDE CABINET	OUTSIDE CABINET	
N.E. CORNER	I		Signals	Street Light
TOTAL	I	30 AMP	50 AMP	30 AMP

FLASHING OPERATIONS	
EMERGENCY	SCHEDULED
FY - 0's	FY - 0's
FR - 0's 2,4,6,8	FR - 0's 2,4,6,8

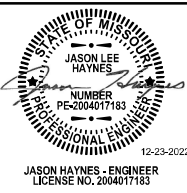
INPUT FILE ASSIGNMENTS TYPE 332L CABINET													
I	2	3	4	5	6	7	8	9	10	11	12	13	14
U												PED 02	FLH
L												PED 06	
U												PED 04	STOP
L												PED 08	TIME

OUTPUT FILE ASSIGNMENTS													
FR1	01	02	03	04	05	06	07	08	09	10	11	12	13
FR2													
FR3	05	06	07	08	09	10	11	12	13	14	15	16	17
FR4													
K1	09	10	11	12	13	14	15	16	17	18	19	20	21
K2	01-R, Y,F,Y	03-R, Y,F,Y	05-R, Y,F,Y	07-R, Y,F,Y	09-R, Y,F,Y	11-R, Y,F,Y	13-R, Y,F,Y	15-R, Y,F,Y	17-R, Y,F,Y	19-R, Y,F,Y	21-R, Y,F,Y	23-R, Y,F,Y	25-R, Y,F,Y

SEQUENCE / INTERVAL																										
APPROACH	FACE NO.	SEQUENCE NO. 1				SEQUENCE NO. 2				SEQUENCE NO. 3				SEQUENCE NO. 4				SEQUENCE NO. 5				SEQUENCE NO. 6				
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
EASTBOUND 3RD ST		2	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R
	2A	R	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	
	2P	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
	2PA	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
WESTBOUND 3RD ST		6	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R
	6A	R	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	
	6B	R	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	
	6P	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
6PA	DW	DW	DW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
NORTHBOUND GRAND BLVD		8	G	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
	8A	G	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	
	8P	W	FDW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW	
	8PA	W	FDW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW	W	FDW	DW	DW	
SOUTHBOUND GRAND BLVD		4	G	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R
	4A	G	G	Y	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	
	4P	W	FDW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
	4PA	W	FDW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	
NORTHBOUND STREETCAR		9T	WV	WV	WV	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	WA	WA	WA	YH	
SOUTHBOUND STREETCAR		4T	WV	WV	WV	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	
EASTBOUND STREETCAR		2T	YH	YH	YH	YH	YH	YH	YH	YH	WA	WA	WA	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	
SOUTHBOUND STREETCAR (IN NB TRACK)		8T	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	WV	WV	WV	YH	YH	YH	YH	YH	YH	YH	YH	YH	
HEAD LEGEND		G= GREEN BALL Y= YELLOW BALL R= RED BALL				GA= GREEN ARROW YA= YELLOW ARROW FYA=FLASHING YELLOW ARROW				RA= RED ARROW W= WALK FDW=FLASHING DON'T WALK				DW= DON'T WALK YH= YELLOW HORIZONTAL (STOP) WV= WHITE VERTICAL(GO) WA= WHITE ANGLE (GO CHOICE DIRECTION)												

INTERVAL		PHASE							
		1	2	3	4	5	6	7	8
WALK			EX.		EX.		EX.		EX.
DON'T WALK			EX.		EX.		EX.		EX.
MIN INITIAL			EX.		EX.		EX.		EX.
MAX INITIAL									
ADD/VEH									
VEH EXT			EX.		EX.		EX.		EX.
TIME BFR REDUC									
TIME TO REDUC									
MIN GAP			EX.		EX.		EX.		EX.
MAX LIMIT			EX.		EX.		EX.		EX.
MAXIMUM 2									
YELLOW			EX.		EX.		EX.		EX.
RED CLEAR			EX.		EX.		EX.		EX.

REV	DATE	DESCRIPTION	DESIGNED BY	SMA
			CHECKED BY	JLH
			DRAWN BY	MMO
			CHECKED BY	JLH
			APPROVED BY	NKS
PLOT DATE: 12/23/2022			DATE	12-23-2022



ISSUED FOR BID		DATE: 12-23-2022
HDR Engineering, Inc.		
10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		
NOT FOR CONSTRUCTION		

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING 3RD STREET AND GRAND BOULEVARD

SCALE FOR 22"x34": 1" = 20'	
FILENAME: T101B.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
T101B	217

POSTS																		
POST NO.	POLE LENGTH					MAST ARM LENGTH				SIGNAL HEAD SPACING*				LUMINAIRE TYPE (SEE LIGHTING PLANS)			REMARKS	
										OUT BOARD	1ST IN BOARD	2ND IN BOARD	3RD IN BOARD	ARM LENGTH	KCMO LED TYPE D	POLE ID		
	OCS	18' / 28'	LT	PED	PB	33'	36'			A	B	C	D					
	6	1						1			27	17						
6A																		Pedestal Pole
8	1							1			31	21			6	#1	SBC8505	Comb. OCS/Sig/Light
8A																		Pedestal Pole
8B																		Bike PushButton Pedestal Pole
TOTALS	2				3			1	1		2	2			2	2	2	

*15'

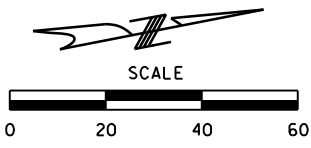
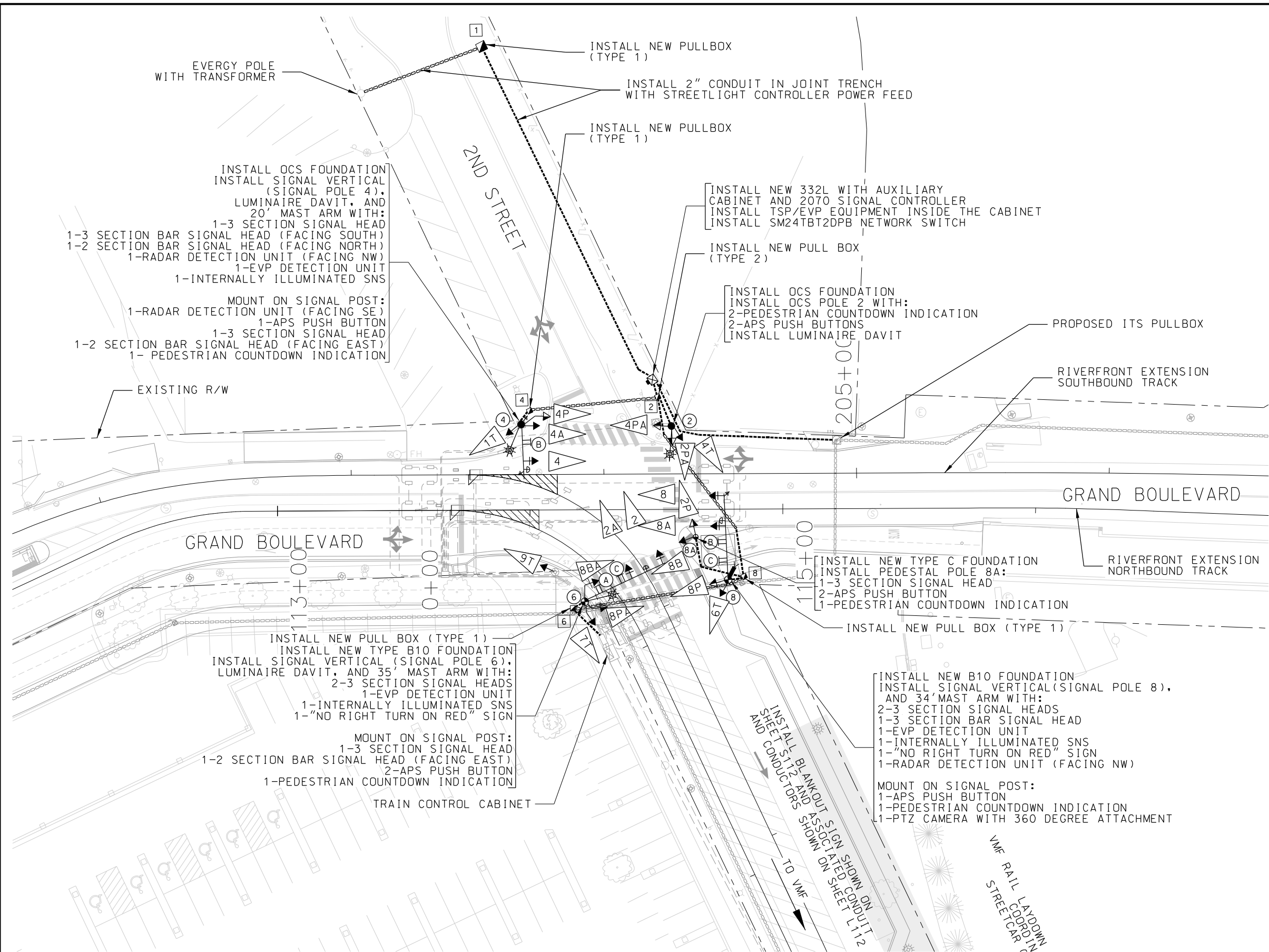
BASES AND PULL BOXES														
LOCATIONS	NO		BASES								PULL BOXES			REMARKS
	POST	PULL BOX	B8	B10	B12	LT. POLE	C	PED PB POLE	OCS	E332	TYPE I	TYPE II	TYPE III	
NE Corner	8								1					
NE Corner	8A						1							
NE Corner	8B						1							
NW Corner	6								1					
NW Corner	6A						1							
NE Corner		8									1			
NW Corner		6									1			
NW Corner		1									1			
TOTALS	5	3					3		2		3			

CONDUITS										
FROM	TO	C-C DISTANCE	TRENCH				IN EXISTING TRENCH			
			1"	2"	3"	4"	1"	2"	3"	4"
EX PB4	PB6	15				14		14		14
PB6	Pole 6	13				14		14		14
PB6	Pole 6A	5			6					
PB6	PB8	65				63		63		63
PB8	Pole 8	9				10		10		10
PB8	Pole 8A	26			27					
PB8	Pole 8B	16			17					
PB1	PB6	47			45					
Sub-Totals					95	101		101		101
TOTALS					95	105		105		105

SIGNAL HEADS																																									
NO.		INDICATIONS														VISORS		BRACKET		See Note Below				ONE - FACE																	
POST	FACE	12" LED'S														The Hand and The Walking Person	Type		Type		Sections				Sections																
		R	Y	G	R←	Y←	FY←	G←	R↘	Y↘	G↘	R→	Y→	G→	—			/	Tune I	Cut Away	Std.		Spec.		1	3	4	5	1		2		3			4			5		
																					I	II	III									T	S	T	S	T	S	M	T	S	M
2	8BA								1	1	1							3		1																					
6	6	1	1	1														3		1																					
6	6A	1	1	1														3		1																					
6	6B	1	1	1														3		1																					
6	4PA																	3		1																					
																				1																					
6A	6P																			1																					
6A	4T														1	1		2		1																					
8	8	1	1	1														3		1																					
8	8A	1	1	1														3		1																					
8	8T															1	1	2		1																					
8	6PA																			1																					
8A	8P																			1																					
8B	8B								1	1	1							3		1																					
TOTALS		5	5	5					2	2	2					2	2	4	25		13									5		4	4								

DETECTORS					
DET. NO.	PHASE	PUSH BUTTON	APS EQUIPMENT	RADAR DETECTION	PTZ+360 CAMERA
2	2			1	
4	4			1	
6	6			1	1
8	8			1	
4PA		1	1		
6P		1	1		
6PA		1	1		
8P		2	2		
TOTALS		5	5	4	1

CABLE QUANTITIES																
FROM	TO	C-C DISTANCE	POWER		LUMINAIRE	CONTROL TYPE 20-1				RADAR	EVP	INTERNALLY ILLUMINATED STREET NAME SIGN	CCTV	ITS	REMARKS	
			1c#3	3c#8	1c#12 (Pole & Bracket)	2c#14	3c#14	5c#14	7c#14	Radar Cable	Opticom Cable	3c#10	CAT6	Drop Cable		
☒	4	17				140	56	112	196	112	112	56	28			
4	2	59							65	65	65					
2	2	14							20	20	20					
2	8BA								10							
2	⚡									32						
2	⚡										26					
4	4	14					20			20	20					
4	⚡									35						
4	⚡										35					
4	⏏						13									
4	6	98		104		520	104	416	624	208	208	208	104		1 RUN 3c#8	
6	6	13		19		19		19	57	19	19	19	19		1 RUN 3c#8	
6	6								48							
6	6A								38							
6	⚡									53						
6	⚡										40					
6	⚡				108										3 RUNS 1c#12	
6	6B								13							
6	4PA							10								
6	PB-4PA					9										
6	⬛												30			
6	⏏											18				
6	6A	5				11		11								
6A	6P							10								
6A	PB-6P					9										
6	8	65		71		213	71	142	213	71	71	71			1 RUN 3c#8	
8	8	9		15		15	15	15	30	15	15	15			1 RUN 3c#8	
8	8								56							
8	⚡									39						
8	⚡										48					
8	⏏											35				
8	⏏						42									
8	⚡				108										3 RUNS 1c#12	
8	8A								46							
8	6PA							10								
8	PB-6PA					9										
8	8A	26				32		32								
8B	8A							10								
8A	PB-8A					9										
8	8B	16				22			22							
8B	8B								10							
8B	PB-8B					9										
SUB-TOTALS				209	216	1,017	321	787	1,447	689	679	422	181			
TOTALS				220	230	1,070	340	830	1,520	730	720	450	200			



INTERSECTION NOTES

1. COORDINATE WITH EVERGY FOR POWER CONNECTION TO THE TRAFFIC CONTROLLER CABINET.
2. COORDINATE WITH TRAFFIC CONTROLLER MANUFACTURER FOR TSP/EVP IN-CABINET MODULES AND LICENSES.
3. COORDINATE WITH MID AMERICA OR OTHER SUPPLIER FOR RADAR DETECTOR INSTALLATION.
4. APPLY BLACK COLOR COATING ON TRAFFIC SIGNAL POLE, MAST ARM TO MEET KCMO SPECIFICATIONS.

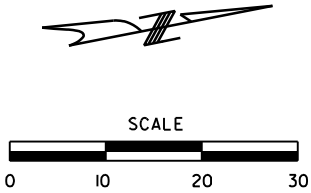
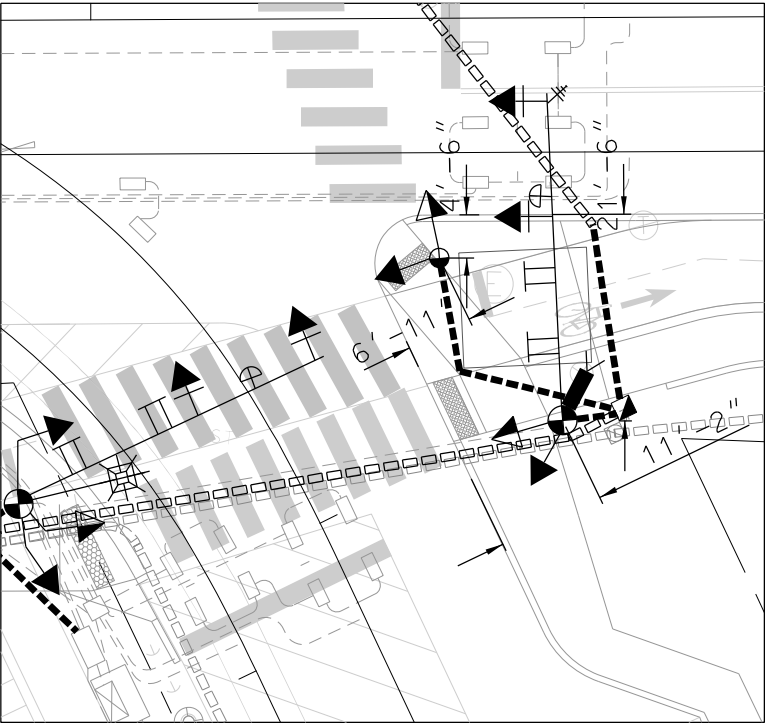
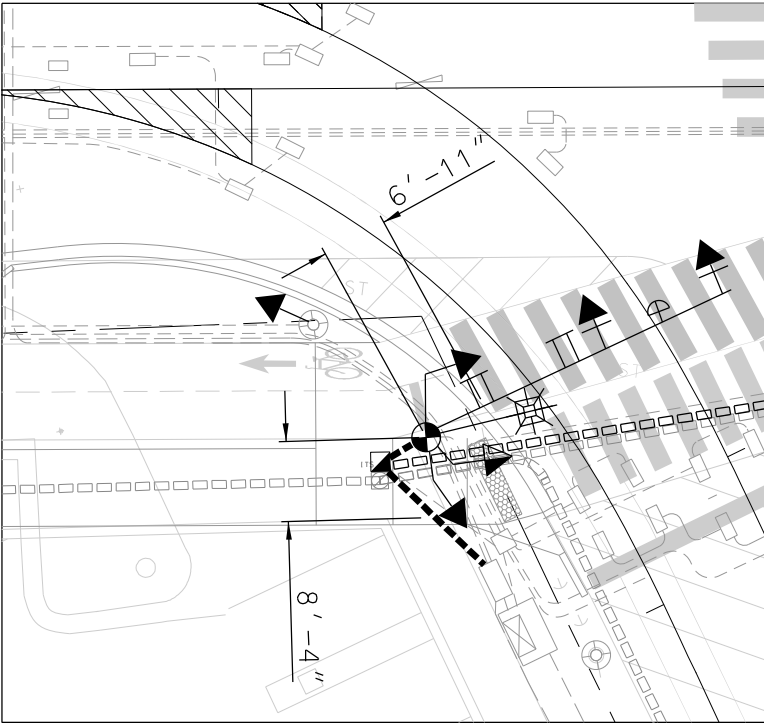
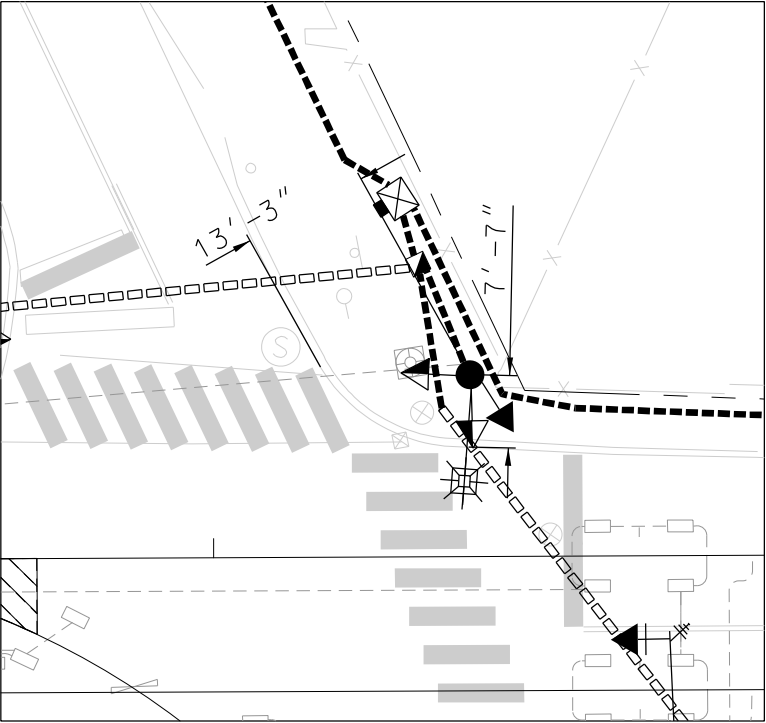
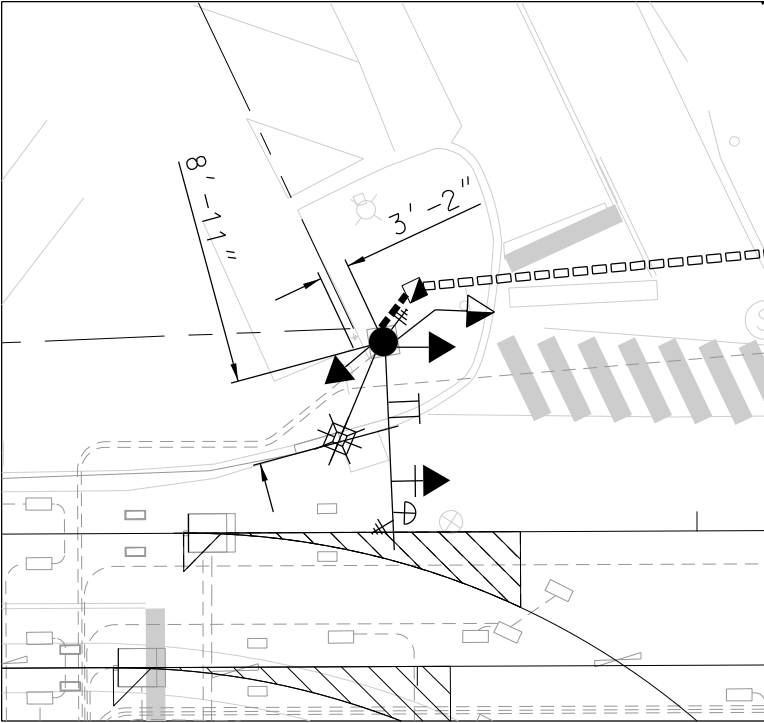
SIGNAL FACE KEY

(COUNTDOWN)							
2, 2A	2P, 2PA	4T, 6T	1T, 9T	8B	8BA		
4, 4A	4P, 4PA	7T					
8, 8A	8P, 8PA						

SIGN KEY

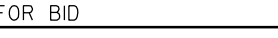
R10-11B 24"x30"	

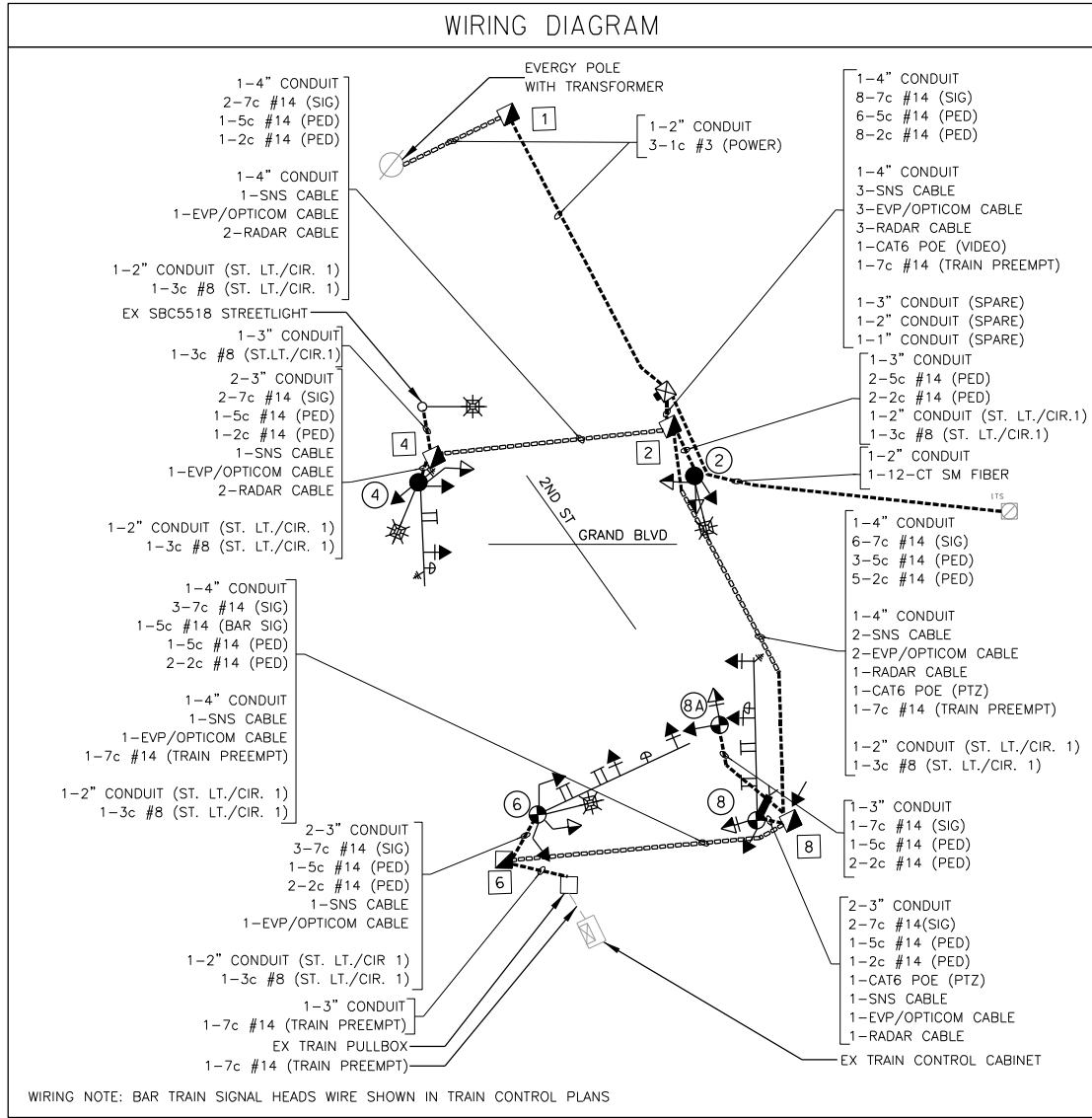
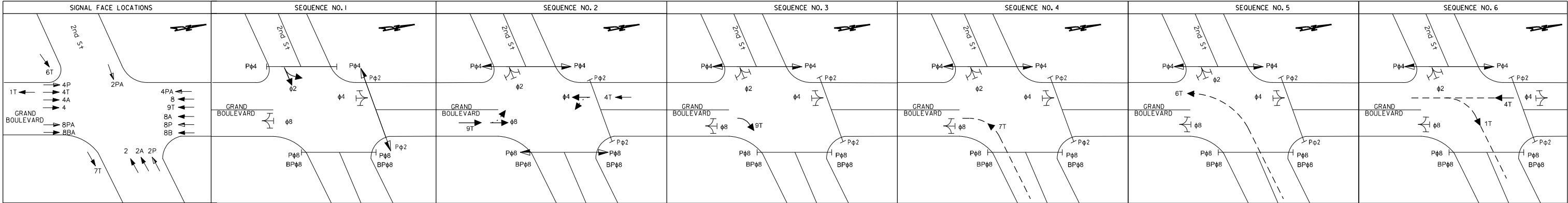
REV			DATE	DESCRIPTION	DESIGNED BY	SMA			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":	
					CHECKED BY	JLH							1" = 20'	
					DRAWN BY	MMO			10450 Holmes Road				FILENAME:	
					CHECKED BY	JLH			Suite 600				T102.dgn	
					APPROVED BY	NKS			Kansas City, MO 64131-3471				CONTRACT NO.:	
PLOT DATE: 12/23/2022									816-360-2700				CONTRACT NO. ***	
									Certificate of Authority: 000856				VOLUME:	
									NOT FOR CONSTRUCTION				DRAWING NO.:	
													SHEET NO.:	
													T102	
													219	



GENERAL NOTES

- 1. CONTRACTOR TO MODIFY THE SIGNALS AS SHOWN IN THE PLANS. MODIFICATIONS SHALL BE DONE IN ACCORDANCE WITH STANDARD SPECIFICATIONS.
- 2. CONTRACTOR TO INSTALL NEW RADAR DETECTION EQUIPMENT.
- 3. CONTRACTOR TO INSTALL NEW APS PEDESTRIAN SIGNAL EQUIPMENT IN ACCORDANCE WITH PROWAG GUIDELINES.
- 4. ALL REMOVED SIGNAL AND LIGHTING APPURTENANCES TO BE RETURNED TO KCMO PUBLIC WORKS, TRAFFIC SIGNAL SECTION.
- 5. INSTALL FIBER OPTIC CABLE TO NEW SIGNAL CABINET.

REV	DATE	DESCRIPTION	DESIGNED BY	SMA			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 10'	
			CHECKED BY	JLH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		FILENAME: T102A.dgn	
			DRAWN BY	MMO						CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY	JLH						VOLUME: 1	
			APPROVED BY	NKS						DRAWING NO.: T102A	SHEET NO.: 220
PLOT DATE: 12/23/2022			10:07:21 AM		DATE		12-23-2022				



CONTROLLER AND EQUIPMENT		TOTALS
CABINET: 332L with Auxiliary Cabinet		1
CONTROLLER: Type 2070C Complete per specs, including software.		1
UPGRADE CONTROLLER CPU MODULE to 2070-IC		1
STREET LIGHT CONTROLLER		
CONFLICT MONITOR with Ethernet Port		1
E05 or Approved Equal Software License		1
Opticom Model 764 Phase Selector		1
Opticom Model 768 Interface Panel		1
Opticom Model 721 Receiver		3
Install SM24BTDPB Network Switch		1
Fiber Optic Patch Panel		1
4-Port Radar Interface Unit		1
REMARKS:		
1. Furnish and install.		

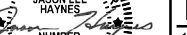
POWER SUPPLY			
LOCATION	Power Supply Asmb.	CIRCUIT BREAKER TRIP RATINGS (All Two-Pole)	
		INSIDE CABINET	OUTSIDE CABINET
N.E. CORNER	1	Signals	Street Lights
TOTAL	1	30 AMP	50 AMP 30 AMP

FLASHING OPERATIONS	
EMERGENCY	SCHEDULED
FY - 0's	FY - 0's
FR - 0's 2,4,8	FR - 0's 2,4,8

SEQUENCE/INTERVAL																											
APPROACH	FACE NO.	SEQUENCE NO. 1				SEQUENCE NO. 2				SEQUENCE NO. 3				SEQUENCE NO. 4				SEQUENCE NO. 5				SEQUENCE NO. 6					
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
EASTBOUND 2ND ST	2	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
	2A	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
	2P	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		
	2PA	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW		
NORTHBOUND GRAND BLVD	8	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
	8A	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
	8P	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW			
	8PA	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW			
	8B	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
	8BA	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
SOUTHBOUND GRAND BLVD	4	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
	4A	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R		
	4P	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW			
	4PA	DW	DW	DW	DW	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW			
WESTBOUND STREETCAR	6T	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH		
	7T	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH		
SOUTHBOUND STREETCAR	4T	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH		
	9T	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH		
NORTHBOUND STREETCAR																											
	1T	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH	YH		
NORTHBOUND STREETCAR (IN SB TRACK)																											
HEAD LEGEND		G= GREEN BALL Y= YELLOW BALL R= RED BALL				GA= GREEN ARROW YA= YELLOW ARROW FYA=FLASHING YELLOW ARROW				RA= RED ARROW W= WALK FDW=FLASHING DON'T WALK				DW= DON'T WALK YH= YELLOW HORIZONTAL (STOP) WV= WHITE VERTICAL(GO) WA= WHITE ANGLE (GO CHOICE DIRECTION)													

SIGNAL TIMINGS		PHASE							
		1	2	3	4	5	6	7	8
INTERVAL	WALK		7		7				7
	DON'T WALK		14		9				11
	MIN INITIAL		10		10				10
	MAX INITIAL								
	ADD/VEH								
	VEH EXT		4		4				4
	TIME BFR REDUC								
	TIME TO REDUC								
	MIN GAP		4		4				4
	MAX LIMIT		35		60				60
	MAXIMUM 2								
	YELLOW		3.3		4.6				3.9
	RED CLEAR		1.4		1.0				1.0

INPUT FILE ASSIGNMENTS													
TYPE 332L CABINET													
I	2	3	4	5	6	7	8	9	10	11	12	13	14
U											PED 02	PED 06	FLH
L											PED 04	PED 08	STOP TIME
U													
L													
OUTPUT FILE ASSIGNMENTS													
FR1	01	02	02	03	04	04							
FR2			PED			PED							
FR3	05	06	06	07	08	08							
FR4			PED			PED							
K1	09	010		011	012								
K2	01-R, Y, FY	03-R, Y, FY		05-R, Y, FY	07-R, Y, FY								

REV	DATE	DESCRIPTION	DESIGNED BY	SMA			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING 2ND STREET AND GRAND BOULEVARD	SCALE FOR 22"x34": 1" = 20'		
			CHECKED BY	JLH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	12-23-2022			FILENAME: T102B.dgn		
			DRAWN BY	MMO							CONTRACT NO.: CONTRACT NO. ***		
			CHECKED BY	JLH							VOLUME:		
			APPROVED BY	NKS							DRAWING NO.: SHEET NO.: T102B 221		
PLOT DATE: 12/23/2022			10:07:26 AM		DATE 12-23-2022		NOT FOR CONSTRUCTION						

DETECTORS					
DET. NO.	PHASE	PUSH BUTTON	APS EQUIPMENT	RADAR DETECTION	PTZ+360 CAMERA
2	2			1	
4	4			1	
8	8			1	1
2P		1	1		
2PA		1	1		
4P		1	1		
4PA		1	1		
8P		2	2		
8PA		2	2		
TOTALS	8	8	8	3	1

POSTS																
POST NO.	POLE LENGTH					MAST ARM LENGTH			SIGNAL HEAD SPACING				LUMINAIRE TYPE (SEE LIGHTING PLANS)			REMARKS
									OUT BOARD	1ST IN BOARD	2ND IN BOARD	3RD IN BOARD	ARM LENGTH	KCMO LED TYPE D	POLE ID	
	OCS	18' /28'	LT	PED	PB	35	20'	34'	A	B	C	D				
2	1												6	#1		Comb. OCS/Ped/Light
4	1						1		13	8			6	#1		Comb. OCS/Sig/Light
6		1				1			32	16			6	#1		Comb Sig/Light
8		1						1	34	22						Signal Pole
8A				1												Pedestal Pole
TOTALS	2	2		1		1	1	1	3	3			3	3		

LEGEND
T - TOP MOUNT
S - SIDE MOUNT
M - MAST ARM MOUNT

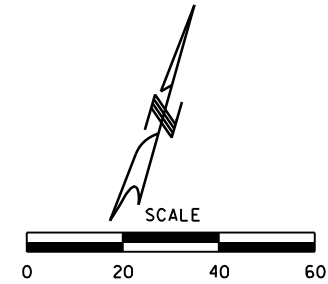
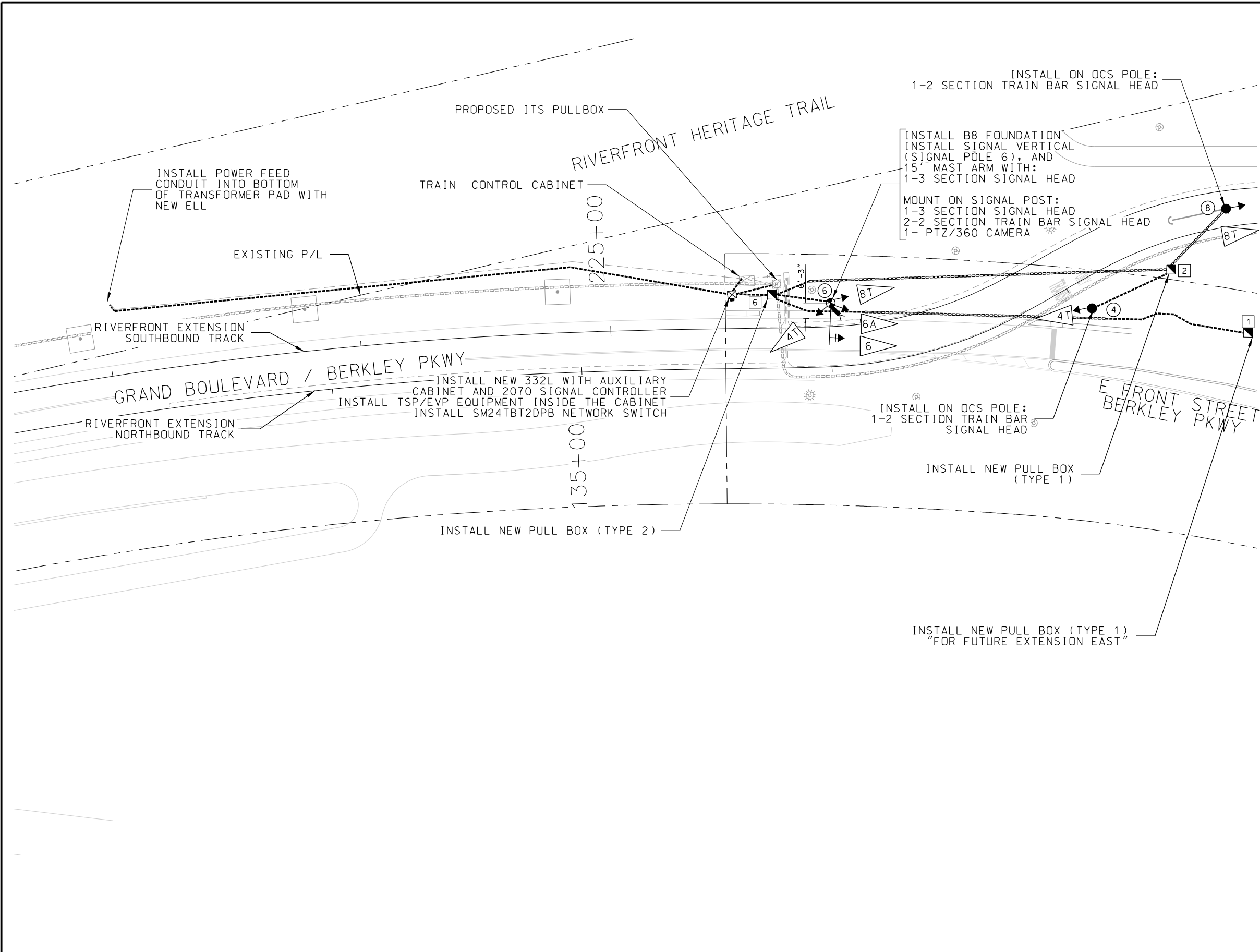
Note: Signal head spacing to be adjusted to site conditions and approved by the project sponsor.
*35 LED MH

BASES AND PULL BOXES														
LOCATIONS	NO		BASES								PULL BOXES			REMARKS
	POST	PULL BOX	B8	B10	B12	LT. POLE	C	PED PB POLE	OCS	E332	TYPE I	TYPE II	TYPE III	
NW Corner	2								1					
SW Corner	4								1					
SE Corner	6			1										
NE Corner	8			1										
NE Corner	8A						1							
NW Corner		2										1		
SW Corner		4									1			
SE Corner		6									1			
NE Corner		8									1			
NW Corner		1									1			
TOTALS	5	5		2			1		2		4	1		

CONDUITS										
FROM	TO	C-C DISTANCE	TRENCH				IN EXISTING TRENCH			
			1 "	2 "	3 "	4 "	1 "	2 "	3 "	4 "
P.S	PB1	52		55						
PB1	Controller	148		151						
Controller	PB2	8				11	11	11	11	11
PB2	Pole 2	13			14					
PB2	PB4	52				50		50		50
Controller	ITS PB	86		84						
PB4	Pole 4	7			8			8	8	
PB2	PB8	81				79		79		79
PB8	Pole 8	7			8				8	
PB8	Pole 8A	30			31					
PB8	PB6	70				68		68		68
PB6	Pole 6	6			7			7	7	
PB6	TRAIN PB	18		16						
STL SBC5518	PB4	10			13					
SUB TOTALS				306	81	208	11	223	34	208
TOTALS				310	85	220	15	235	40	220

SIGNAL HEADS																																								
NO.		INDICATIONS															VISORS		BRACKET						ONE - FACE															
POST	FACE	12" LED'S															The Hand and The Walking Person	Type		Type		Sections				Sections														
		R	Y	G	R←	Y←	FY←	G←	R↖	Y↖	G↖	R→	Y→	G→	—			/	Tunnel	Cut Away	Std.			Spec.			1	3	4	5	1		2		3		4		5	
																					I	II	III									T	S	S	M	T	S	M	T	S
2	2P																	1			1																			
2	4PA																	1																						
4	4	1	1	1														3		1																				
4	4T														1	1		2		1																				
4	4A	1	1	1														3		1																				
4	6T														1	1		2		1																				
4	4P																		1																					
4	1T														1	1	1	3		1																				
6	7T														1	1		3		1																				
6	8PA																																							
6/8A	8BA/8B								2	2	2							6		2																				
8	9T														1	1	1	3		1																				
8	8	1	1	1														3		1																				
8	8A	1	1	1														3		1																				
8	2PA																																							
8A	2	1	1	1														3		1																				
8A	2A	1	1	1														3		1																				
8A	8P																																							
TOTALS		6	6	6					2	2	2				5	5	2	6	37		16																			

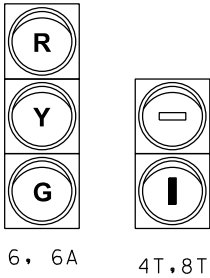
CABLE QUANTITIES															
FROM	TO	C-C DISTANCE	POWER		LUMINAIRE	CONTROL TYPE 20-1				RADAR	EVP	ILLUMINATED STREET NAME SIGN	CCTV	ITS	REMARKS
			1c#3	3c#8	1c#12 (Pole & Bracket)	2c#14	3c#14	5c#14	7c#14	Radar Cable	Opticom Cable	3c#10	CAT6	Drop Cable	
		52	288												3 RUNS 1c#3
		148	477												3 RUNS 1c#3
STL SBC5518		10		63											1 RUNS 3c#8
		8				114		114	133	57	57	57	19		
		13		19		38		38							1 RUNS 3c#8
								10							
	PB-2PA					9									
								10							
	PB-4PA					9									
					90										3 RUNS 1c#12
		52		58		58		58	116	116	58	58			1 RUNS 3c#8
		7		13		13		13	26	26	13	13			1 RUNS 3c#8
									33						
										38					
											38				
									13						
								10							
	PB-4P					9									
										20					
					90										3 RUNS 1c#12
											27				
		81				435		261	522	87	174	174	87		1 RUN 3c#8
		7				13		13	26	13	13	13	13		
									52						
										53					
											44				
									32						
								10							
	PB-8P					9									
												30			
											47				
		30				72		36	36						
								10	10						
	PB-2P/ PB-8B					18									
		70		76		76		76	228		76	76			1 RUN 3c#8
		6		12		12		12	36		12	12			1 RUN 3c#8
									52						
									36						
											47				
												26			
								10							
	PB-8PA/ PB-8BA					18									
					90										3 RUNS 1c#12
	TRAIN PB	10							16						
TRAIN PB	TRAIN CTL	7							13						
		86												185	
SUB-TOTALS			765	367	241	991	0	681	1,380	410	532	503	149	185	
TOTALS			805	390	255	1045	0	720	1,450	435	560	530	160	185	



INTERSECTION NOTES

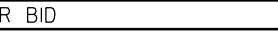
1. COORDINATE WITH EVERGY FOR POWER CONNECTION TO THE TRAFFIC CONTROLLER CABINET.
2. COORDINATE WITH TRAFFIC CONTROLLER MANUFACTURER FOR TSP IN-CABINET MODULES AND LICENSES.
3. APPLY BLACK COLOR COATING ON TRAFFIC SIGNAL POLE, MAST ARM TO MEET KCMO SPECIFICATIONS.

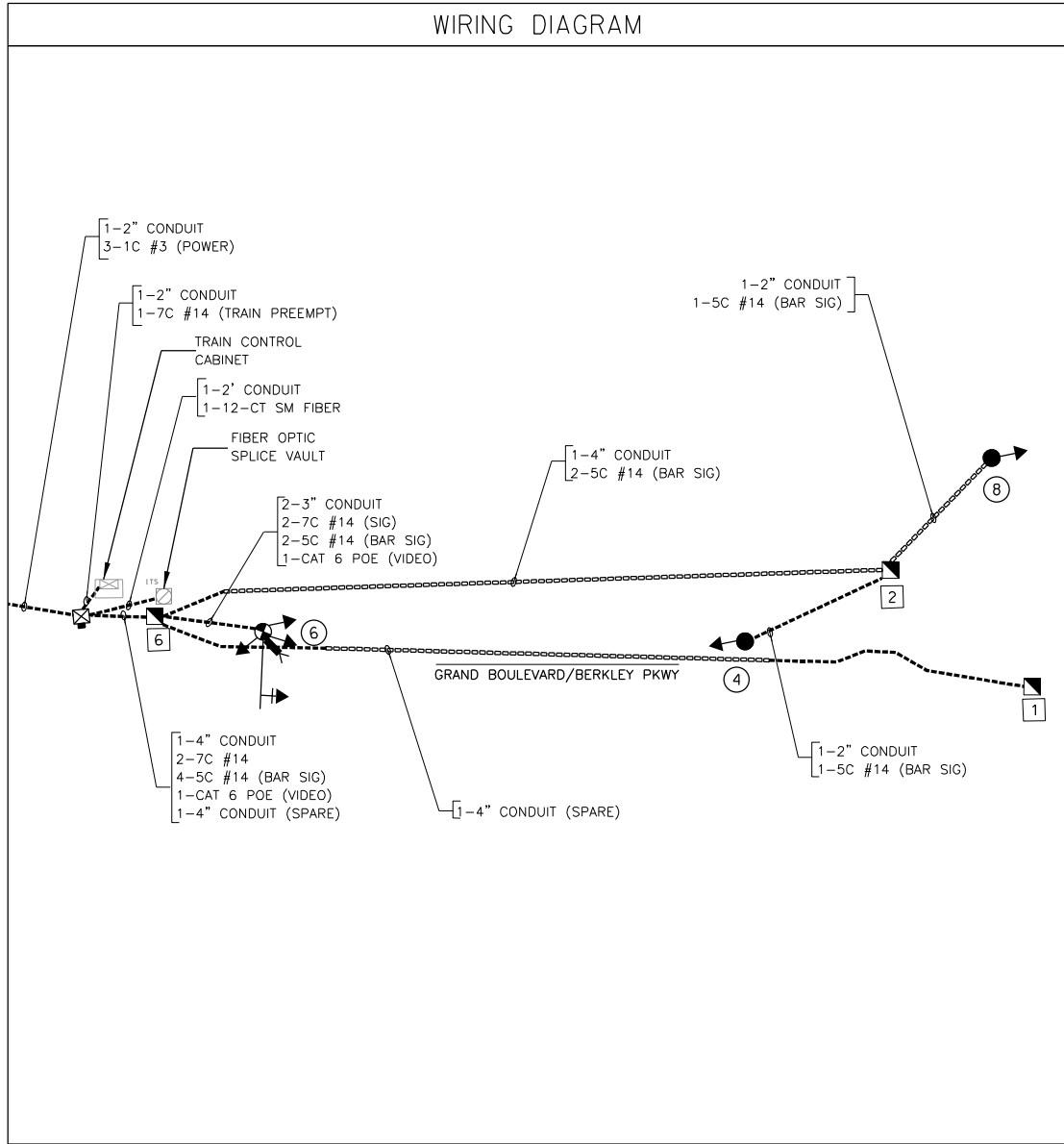
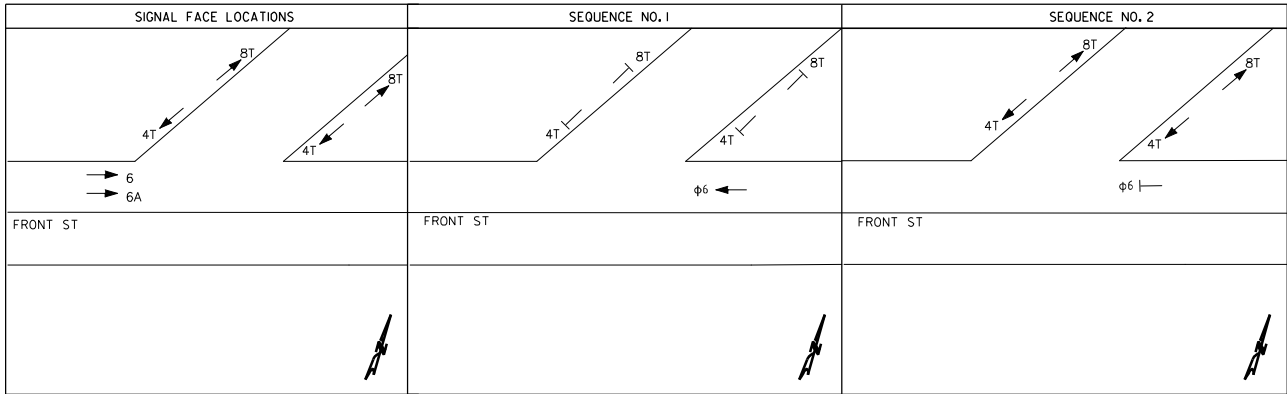
SIGNAL FACE KEY



SIGN KEY

NO SIGNS

REV DATE DESCRIPTION			DESIGNED BY SMA				ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION TRAFFIC SIGNAL LAYOUT PLAN BERKLEY PARKWAY / RIVERFRONT DRIVE			SCALE FOR 22"x34": 1" = 20' FILENAME: T103.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: T103 SHEET NO.: 223	
			CHECKED BY JLH				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856						
			DRAWN BY MMO										
			CHECKED BY JLH										
			APPROVED BY NKS										
PLOT DATE: 12/23/2022 10:07:32 AM			DATE 12-23-2022				NOT FOR CONSTRUCTION						



CONTROLLER AND EQUIPMENT	TOTALS
CABINET: 332L with Auxiliary Cabinet	1
CONTROLLER: Type 2070C Complete per specs, including software.	1
UPGRADE CONTROLLER CPU MODULE to 2070-IC	1
STREET LIGHT CONTROLLER	
CONFLICT MONITOR with Ethernet Port	1
EOS or Approved Equal Software License	1
Opticom Model 762 (or 764) Phase Selector	
Opticom Model 768 Interface Panel	
Opticom Model 721 Receiver	
Install SM24TB20PB Network Switch	1
Fiber Optic Patch Panel	1
4-Port Radar Interface Unit	
REMARKS:	
1. Furnish and install.	

POWER SUPPLY				
LOCATION	Power Supply Asmb.	CIRCUIT BREAKER TRIP RATINGS (All Two-Pole)		
N.E. CORNER	1	INSIDE CABINET	OUTSIDE CABINET	
			Signals	Street Lights
TOTAL	1	30 AMP	50 AMP	30 AMP

FLASHING OPERATIONS	
EMERGENCY	SCHEDULED
FY - 0's	FY - 0's
FR - 0's 6	FR - 0's 6

		SEQUENCE / INTERVAL																									
APPROACH	FACE NO.	SEQUENCE NO. 1				SEQUENCE NO. 2				SEQUENCE NO. 3				SEQUENCE NO. 4				SEQUENCE NO. 5				SEQUENCE NO. 6					
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
WESTBOUND FRONT ST	6	G	G	Y	R	R	R	R	R																		
	6A	G	G	Y	R	R	R	R	R																		
NORTHBOUND STREETCAR	4T	YH	YH	YH	YH	WV	WV	WV	YH																		
SOUTHBOUND STREETCAR	8T	YH	YH	YH	YH	WV	WV	WV	YH																		
HEAD LEGEND		G= GREEN BALL Y= YELLOW BALL R= RED BALL				GA= GREEN ARROW YA= YELLOW ARROW FYA= FLASHING YELLOW ARROW				RA= RED ARROW W= WALK FDW= FLASHING DON'T WALK				DW= DON'T WALK YH= YELLOW HORIZONTAL (STOP) WV= WHITE VERTICAL (GO)													

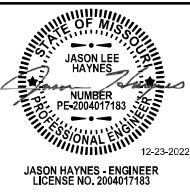
		SIGNAL TIMINGS								
		PHASE								
		SC	1	2	3	4	5	6	7	8
INTERVAL	WALK									
	DON'T WALK									
	MIN INITIAL							10		
	MAX INITIAL									
	ADD/VEH									
	VEH EXT							4		
	TIME BFR REDUC									
	TIME TO REDUC									
	MIN GAP									
	MAX LIMIT									
	MAXIMUM 2									
	YELLOW							4.8		
RED CLEAR							1.5			

NOTE: SET PHASE 6 TO DWELL GREEN

INPUT FILE ASSIGNMENTS TYPE 332L CABINET													
I	2	3	4	5	6	7	8	9	10	11	12	13	14
U											PED 02	PED 06	FLH
L											PED 02	PED 06	STOP
U											PED 04	PED 08	TIME
L													

OUTPUT FILE ASSIGNMENTS									
FR1	01	02	02	03	04	04			
FR2			PED			PED			
FR3	05	06	06	07	08	08			
FR4			PED			PED			
K1	09	010		011	012				
K2	01-R, Y, FY	03-R, Y, FY		05-R, Y, FY	07-R, Y, FY				

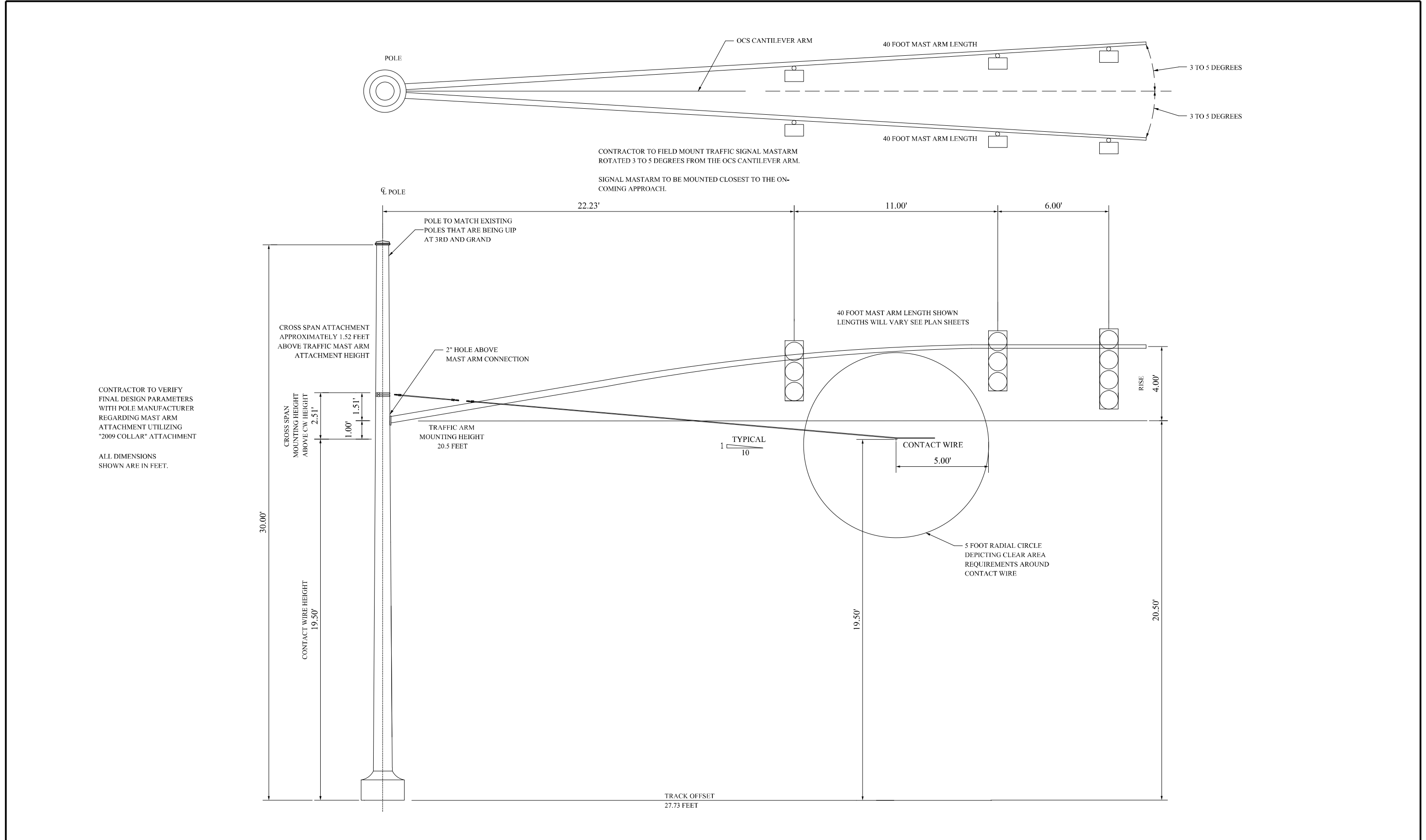
REV	DATE	DESCRIPTION	DESIGNED BY	SMA
			CHECKED BY	JLH
			DRAWN BY	MMO
			CHECKED BY	JLH
			APPROVED BY	NKS
PLOT DATE: 12/23/2022			DATE	12-23-2022



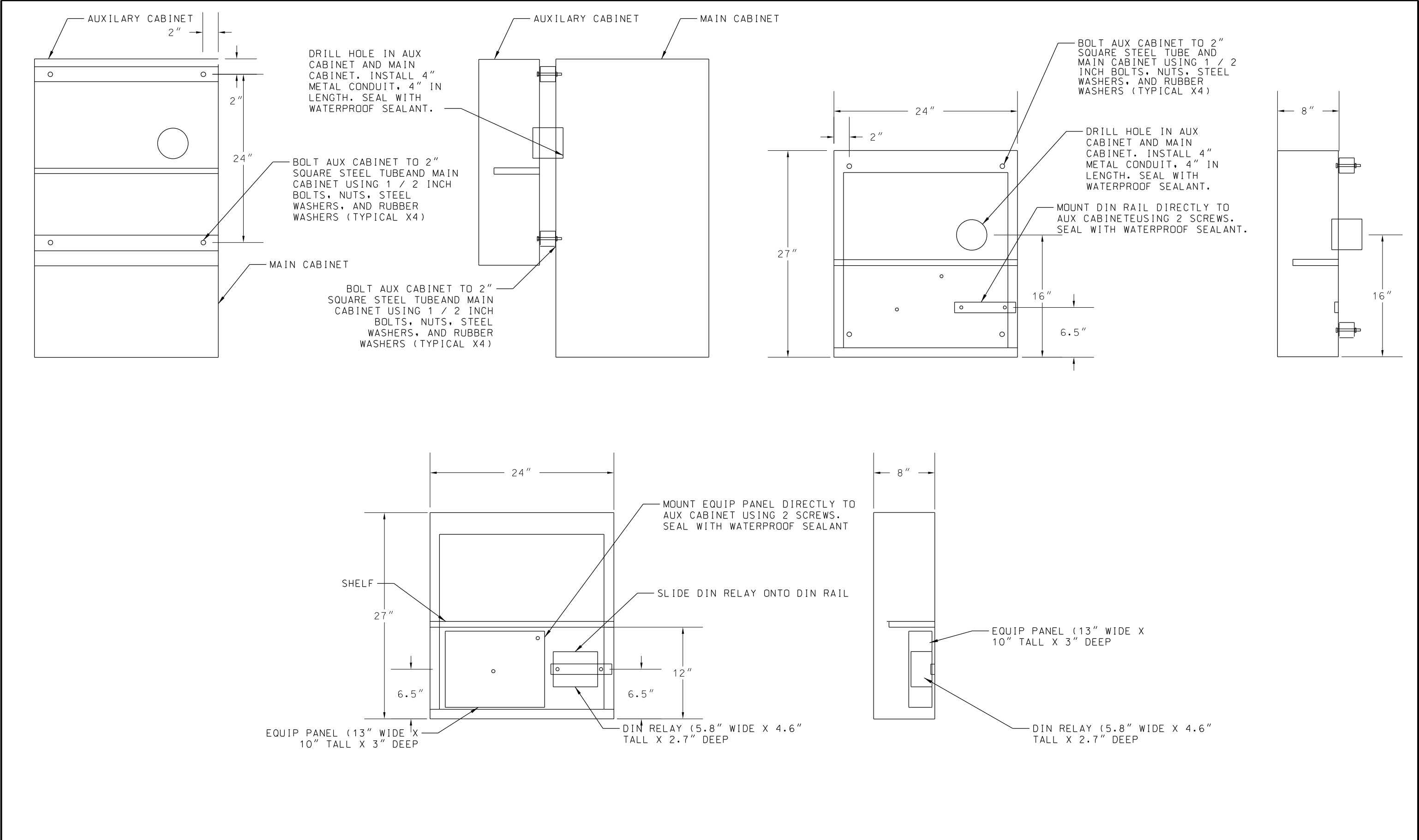
ISSUED FOR BID	DATE: 12-23-2022
 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

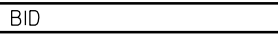
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
TRAFFIC SIGNAL WIRING DIAGRAM AND PHASING BERKLEY PARKWAY / RIVERFRONT DRIVE	

SCALE FOR 22"x34": 1" = 20'	
FILENAME: T103B.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.: T103B	SHEET NO.: 224

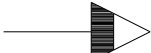


REV	DATE	DESCRIPTION	DESIGNED BY	SMA			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":	
			CHECKED BY	JLH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	TRAFFIC SIGNAL DETAILS CROSS SPAN JOINT USE TRAFFIC/OCS POLE		H: 1"=20'	
			DRAWN BY	MMO						FILENAME:	
			CHECKED BY	JLH						T201.dgn	
			APPROVED BY	NKS						CONTRACT NO.:	
PLOT DATE: 12/23/2022			DATE		12-23-2022	NOT FOR CONSTRUCTION		CONTRACT NO. ***		VOLUME:	
									DRAWING NO.:	SHEET NO.:	
									T201	226	



<table><tr><th>REV</th><th>DATE</th><th>DESCRIPTION</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>			REV	DATE	DESCRIPTION																DESIGNED BY SMA	 	ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION TRAFFIC SIGNAL DETAILS AUXILIARY CABINET MOUNTING DETAIL		SCALE FOR 22"x34": H: 1/2"=20'	
REV	DATE	DESCRIPTION																										
			CHECKED BY JLH	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	FILENAME: T202.dgn																							
			DRAWN BY MMO		CONTRACT NO.: CONTRACT NO. ***																							
			CHECKED BY JLH		VOLUME: 1																							
			APPROVED BY NKS		DRAWING NO.: T202																							
			DATE 12-23-2022		SHEET NO.: 227																							
PLOT DATE: 12/23/2022 10:07:42 AM					NOT FOR CONSTRUCTION																							

TRAFFIC SIGNAL SYMBOLS



OPTICALLY LIMITING TRAFFIC
SIGNAL HEAD



TRAFFIC SIGNAL HEAD



TRAFFIC SIGNAL HEAD WITH BACK PLATE



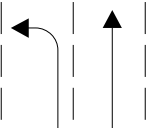
PEDESTRIAN SIGNAL HEAD



EXISTING SIGNAL HEAD



STOP BAR



LANE USE



STEEL POLE



COMBINATION OCS/SIGNAL POLE



MAST ARM POLE



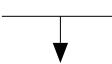
SIGNAL PEDESTAL



CONTROLLER



PULL BOX



SPAN WIRE WITH
SIGNAL HEAD



STREETLIGHT
CONTROLLER



SIGN ON MAST-ARM/POLE



OPTICOM DETECTOR



RADAR DETECTOR



POWER SUPPLY ASSEMBLY



CONDUIT IN TRENCH



CONDUIT PUSHED

3"

SIZE OF CONDUIT

3-2c #14

NUMBER & SIZE OF CABLE



SIGNAL FACE NUMBER



POST NUMBER



PULL BOX NUMBER



SHOEBOX LUMINAIRE



VEHICULAR DETECTION CAMERA

ITS



ITS PULLBOX



TRAIN CABINET

R RED LENS

Y YELLOW LENS

G GREEN LENS

R ← RED LEFT ARROW LENS

Y ← YELLOW LEFT ARROW LENS

G ← GREEN LEFT ARROW LENS

R → RED RIGHT ARROW LENS

Y → YELLOW RIGHT ARROW LENS

G → GREEN RIGHT ARROW LENS

R ↑ RED STRAIGHT ARROW LENS

Y ↑ YELLOW STRAIGHT ARROW LENS

G ↑ GREEN STRAIGHT ARROW LENS

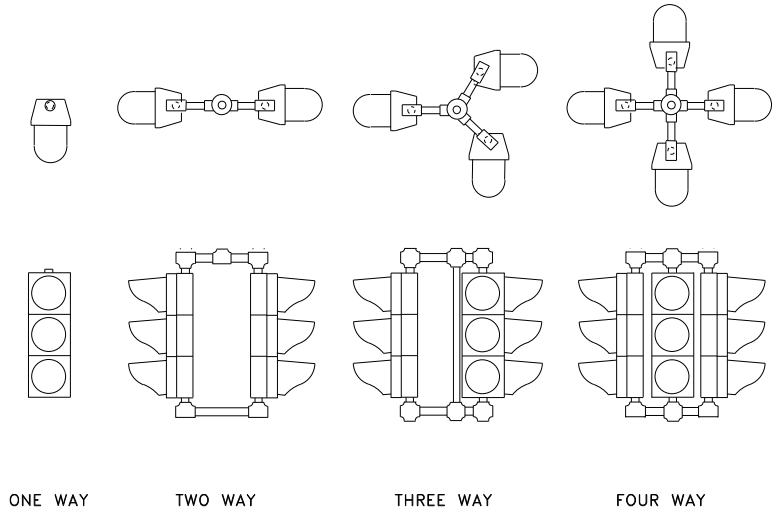
W WALK

DW DON'T WALK

FDW FLASH DON'T WALK

REV	DATE	DESCRIPTION	DESIGNED BY	SMA			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	TRAFFIC SIGNAL SIGNAL DETAILS TRAFFIC SIGNAL SYMBOLS		FILENAME:	
			DRAWN BY	MMO						T203.dgn	
			CHECKED BY	JLH						CONTRACT NO.:	
			APPROVED BY	NKS						CONTRACT NO. ***	
										VOLUME:	
PLOT DATE: 12/23/2022			10:07:44 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:	
									T203	228	

TRAFFIC SIGNAL HEAD DETAILS

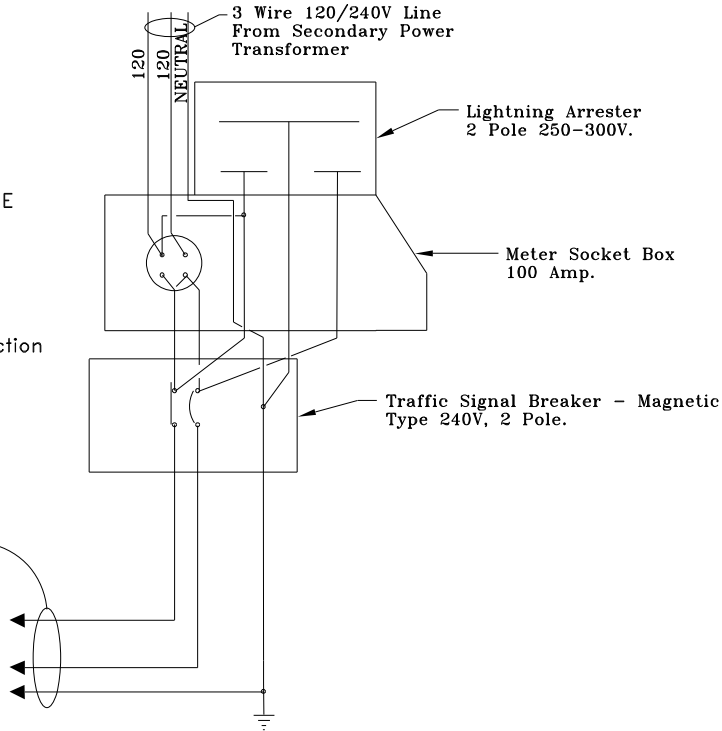


SPAN WIRE MOUNT
OVERHEAD BRACKETS

SIDE MOUNT
ONE WAY BRACKETS

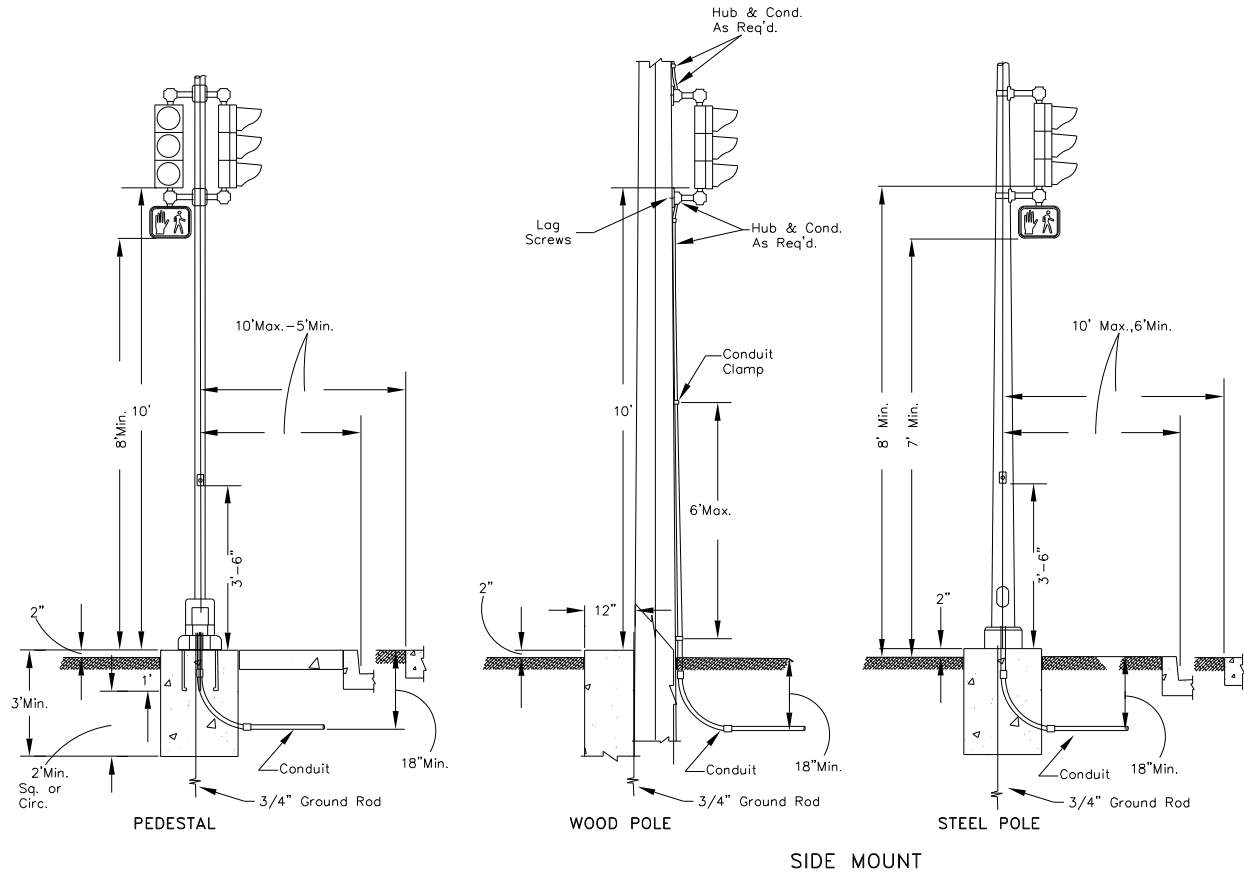
SIDE MOUNT
TWO WAY BRACKETS

- SWITCHING CABLE WIRING COLOR CODE
(Load Relays To Signal Heads)
- Traffic Signal Head
1. Red to Red Signal Section
 2. Orange to Yellow Signal Section
 3. Green to Green Signal Section
 4. Black to Flashing Yellow Arrow Section
- Pedestrian Signal Head
1. Red to "Don't Walk" Section
 2. Green to "Walk" Section



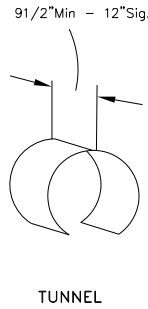
POWER SUPPLY ASSEMBLY CIRCUIT

POWER SUPPLY AND POWER MONITOR WIRING AND SWITCHING WIRING COLOR CODE

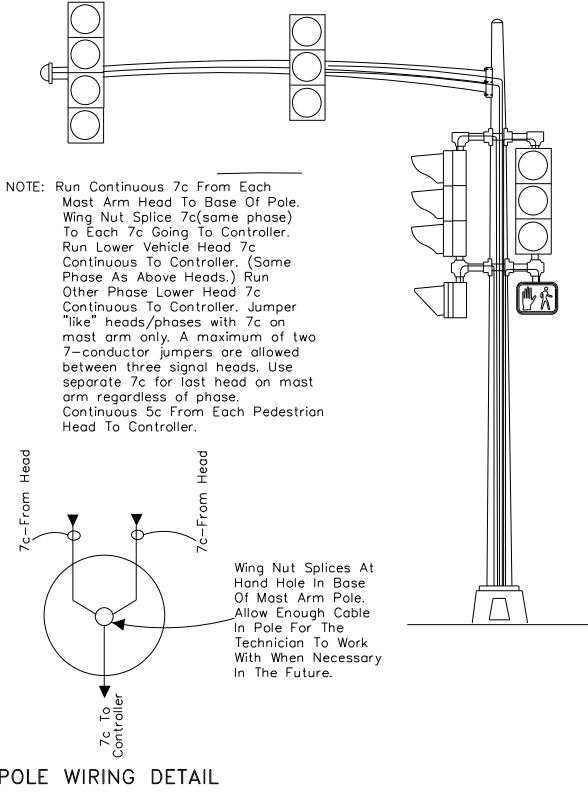


NOTES

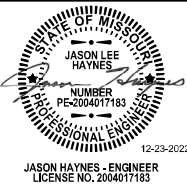
1. All Post Wire Outlets To Be Equipped With Bushings.
2. Side Mounted Optically Limiting Heads Shall Have A Post Clearance Of 5-1/2 inches.
3. Conventional Vehicles And Pedestrian Heads Are Of Polycarbonate Materials.
4. Contractor To Furnish And Install All Lamps Per Specifications.



VISOR



REV	DATE	DESCRIPTION	DESIGNED BY	SMA
			CHECKED BY	JLH
			DRAWN BY	MMO
			CHECKED BY	JLH
			APPROVED BY	NKS
PLOT DATE: 12/23/2022			DATE	12-23-2022



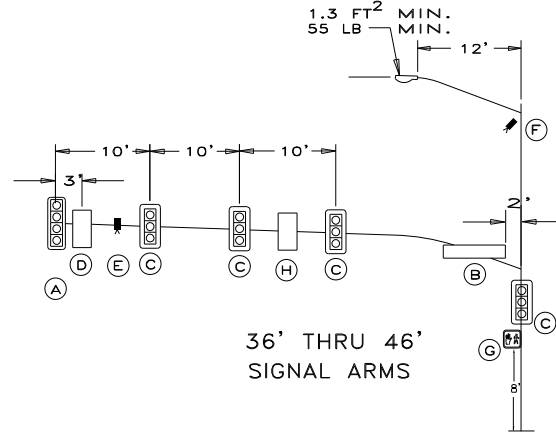
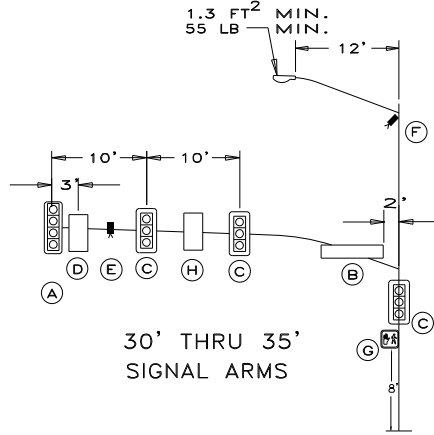
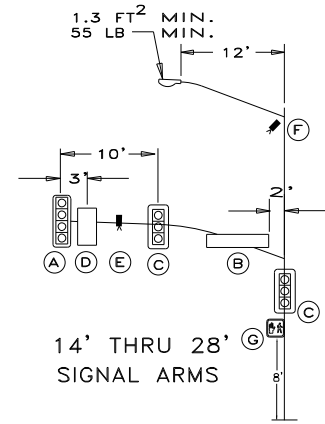
ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRAFFIC SIGNAL
SIGNAL DETAILS
SIGNAL HEAD DETAILS

SCALE FOR 22"x34": NOT TO SCALE	FILENAME: T204.dgn
CONTRACT NO.: CONTRACT NO. ***	VOLUME:
DRAWING NO.: T204	SHEET NO.: 229

TRAFFIC SIGNAL MAST ARM DETAILS

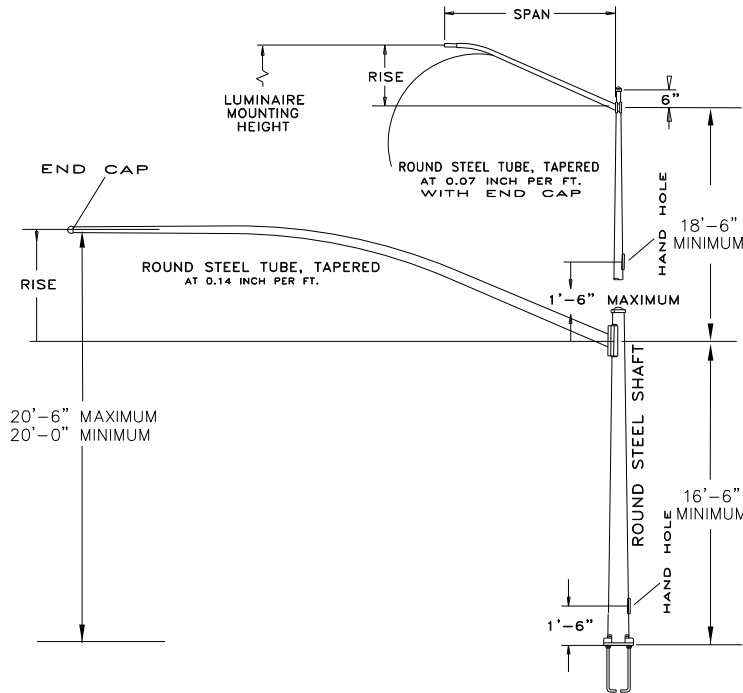


DEVICE	DESCRIPTION
(A)	12"-4 SEC. SIGNAL WITH BACKPLATE (70 lb minimum)
(B)	ILLUMINATED STREET NAME SIGN (120" x 18"; 125 lb minimum)
(C)	12"-3 SEC. SIGNAL WITH BACKPLATE (50 lb minimum)
(D)	ILLUMINATED REGULATORY SIGN (30" x 36"; 50 lb minimum)
(E)	DETECTION/WIRELESS EQUIPMENT (12" x 18"; 20 lb minimum)
(F)	PAN,TILT AND ZOOM CAMERA (12" x 18"; 20 lb minimum)
(G)	Dual Ped. Signals (18" x 22"; 25 lb minimum/signal)
(H)	ILLUMINATED REGULATORY SIGN (24" x 30"; 30 lb minimum)

MAST ARM LOADING INFORMATION

GENERAL NOTES

- 1) ALL POLES, ARMS AND MISCELLANEOUS EQUIPMENT SHALL CONFORM WITH THESE DETAILS AND THE LATEST EDITION OF THE RELEVANT KCMO STANDARD SPECIFICATIONS.
- 2) ALL STRUCTURES TO MEET THE DESIGN CRITERIA OF THE 2009 OR LATEST AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS FOR 90 M.P.H. WIND ZONE WITH A 50 YEAR RECURRENCE INTERVAL, APPROPRIATE FATIGUE CATEGORY, GALLOPING AND TRUCK INDUCED LOADS.
- 3) ALL SHOP DRAWINGS FOR EQUIPMENT TO BE USED SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER AND APPROVED BY THE PROJECT MANAGER OR HIS/HER AUTHORIZED REPRESENTATIVE PRIOR TO ORDERING EQUIPMENT.
- 4) ALL CIRCUIT CABLES IN PULL BOXES, CONTROLLERS AND POLES SHALL BE IDENTIFIED WITH COLOR TAPES PER STANDARD SPECIFICATION (FOR CIRCUIT LABELING, SEE SPECIFICATION).
- 5) ALL OPENINGS IN POLES, POSTS, BRACKETS, ETC. TO BE CAPPED WATER TIGHT. POLE CAPS, END CAPS AND HAND HOLE COVERS SHALL BE SECURED TO THE POLE/ARM WITH A NO. 12 STAINLESS STEEL SINGLE JACK CAPTIVE CHAIN USING 0.19" x 0.50" POP RIVETS.
- 6) HAND HOLES SHALL HAVE A 5.50" HORIZONTAL OPENING AND 11.00" VERTICAL OPENING
- 7) MAST ARM DESIGN SHALL ENSURE THAT THE BOTTOM OF THE SIGNAL HOUSING, SIGNS AND ANY RELATED ATTACHMENTS LOCATED OVER ANY PORTION OF A STREET OR HIGHWAY THAT CAN BE USED BY MOTOR VEHICLES SHALL BE BETWEEN 16 FEET AND 19 FEET ABOVE THE PAVEMENT.
- 8) 3.00" x 5.00" ALUMINUM ID TAGS SHALL BE SECURED TO THE SHAFTS WITH 4 - 0.19" RIVETS AT 12" ABOVE LOWER HANDHOLE AND TO THE BACK OF THE MAST ARM AT 12" FROM THE SIGNAL ARM ATTACHMENT. ID TAGS SHALL BE STAMPED WITH INFORMATION ABOUT MANUFACTURER, DATE OF MANUFACTURE, SHOP DRAWING NUMBER, P.O. NUMBER, DESIGNATION, ANCHOR/CONNECTING BOLT CIRCLE/DIAMETER AND SPACING, AND SIMPLEX PLATE ANGLE, AS REQUIRED BY THE CITY. ALL TEXT TO BE A MINIMUM OF 0.15" IN HEIGHT.



KANSAS CITY, MISSOURI POLE SERIES

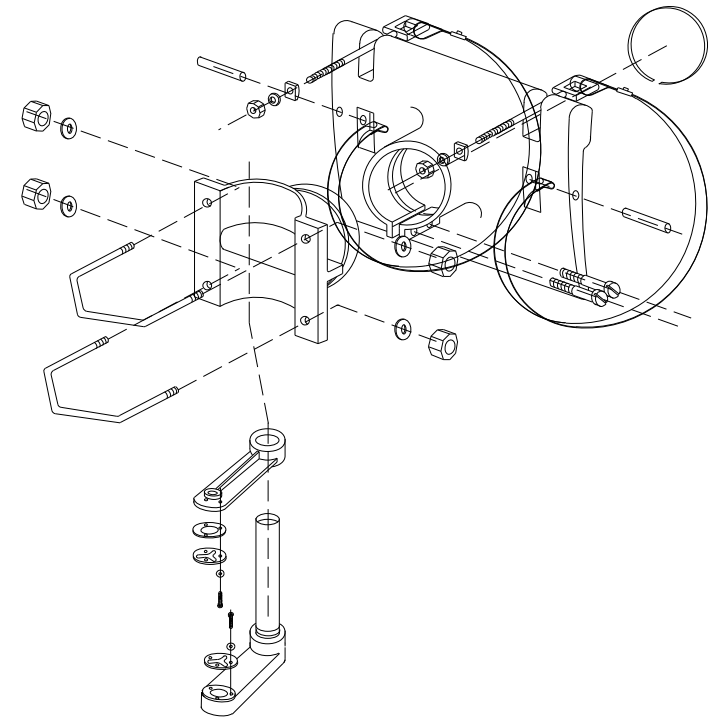
MANUFACTURER	DATE OF MANUFACTURE
SHOP DRAWING NO.	PURCHASE ORDER NO.
DESIGNATION	
CONNECTING BOLT SPACING OR ANCHOR BOLT CIRCLE	CONNECTING BOLT DIA. OR ANCHOR BOLT DIA.
SIMPLEX PLATE ANGLE	

I.D TAG EXAMPLE

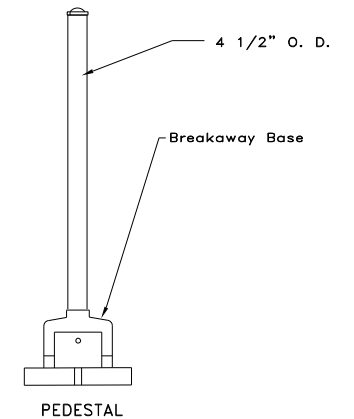
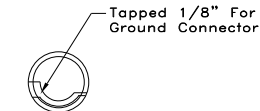
KC - 16.5 - 15 - 30 - 6 - GV
POLE FINISH (GV-GALVANIZED, PG-POWDER COATED OVER GALVANIZING, COLOR TO BE DETERMINED)
LUMINAIRE ARM SPAN WHEN REQUIRED (6, 8, 10, 12, 15)
LUMINAIRE MOUNTING HEIGHT WHEN REQUIRED (NL, SP, 30, 40)
SIGNAL ARM SPAN (15, 20, 25, 30, 35, 40, 45, 50)
SIGNAL ARM MOUNTING HEIGHT (16, 16.5, 17)
KANSAS CITY POLE SERIES (KCS FOR STRAIGHT MAST ARM POLES)

DESIGNATION EXAMPLE

TYPE II BRACKET

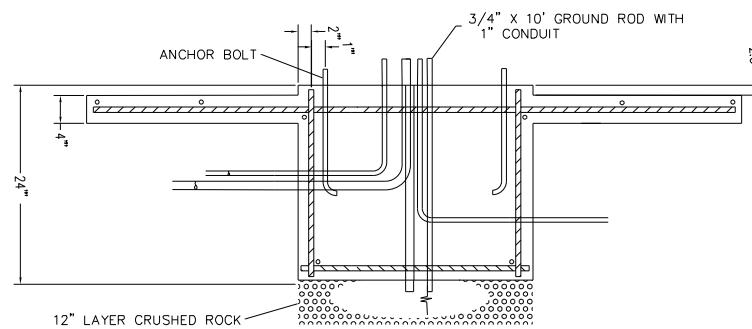
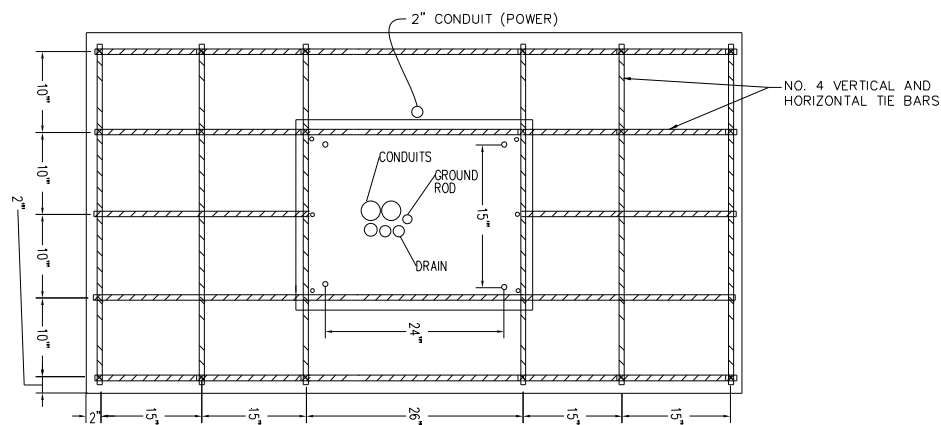
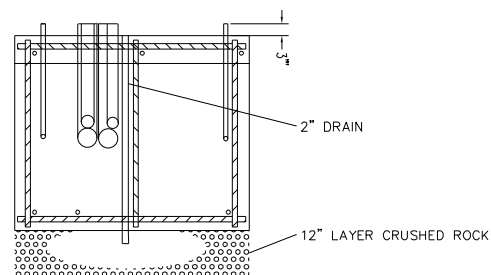
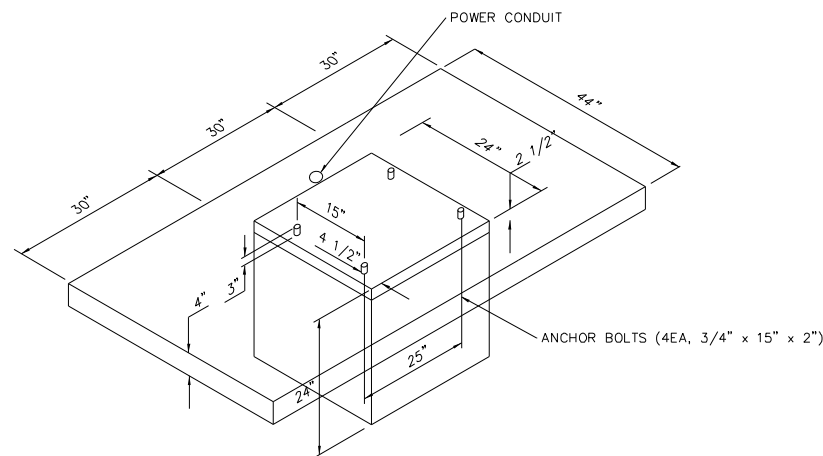


DETAIL A
SIGNAL HANGER W/ ASTRO-BRAC ASSY. CABLE MOUNT

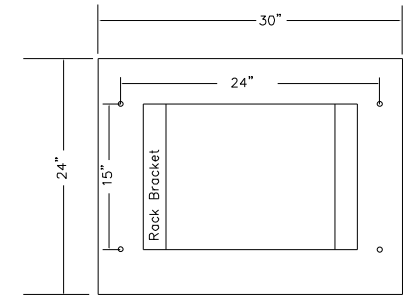


REV	DATE	DESCRIPTION	DESIGNED BY	SMA	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	JLH	HDR	HDR Engineering, Inc.		FILENAME: T205.dgn
			DRAWN BY	MMO	10450 Holmes Road			CONTRACT NO.:
			CHECKED BY	JLH	Suite 600			CONTRACT NO.***
			APPROVED BY	NKS	Kansas City, MO 64131-3471			VOLUME:
					816-360-2700			DRAWING NO.:
					Certificate of Authority: 000856			SHEET NO.:
								T205
								230

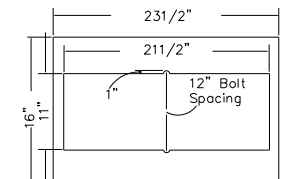
TRAFFIC SIGNAL CONCRETE BASE DETAILS



- NOTES:
1. TOP OF PAD TO BE SLOPED TO DRAIN.
 2. NON-HARDENING DUCT SEALANT TO BE APPLIED TO CONDUIT ENTRANCES.
 3. PROVIDE WATERTIGHT SEAL BETWEEN THE CONTROLLER CABINET AND THE CONCRETE PAD.
 4. CONTROLLER PAD TO BE EXCAVATED AND FORMED TO THE DIMENSIONS SHOWN WITHOUT DISTURBING THE AREAS OF ADJACENT SUBGRADE.
 5. THE ENGINEER IN CHARGE OF CONSTRUCTION SHALL DETERMINE THE ORIENTATION OF THE CONTROLLER PAD.
 6. ALL CONDUITS AND BOLTS SHALL BE RIGIDLY INSTALLED BEFORE PLACEMENT OF CONCRETE.
 7. ANCHOR BOLTS SHALL BE SPACED USING MANUFACTURED SUPPLIED TEMPLATE, CENTERED TO COINCIDE WITH THE CENTER OF THE BASE. TO ALLOW FOR CENTERING OF THE POWER CONTROL CABINET ON THE SIDE OF THE SIGNAL CONTROL BOX.
-
- DOOR TYPE 336



BASE PATTERN TYPE 332



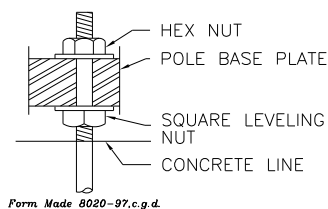
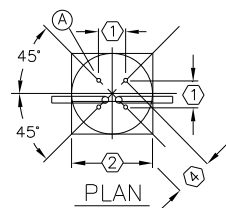
DOOR TYPE 336

TRAFFIC SIGNAL CONTROLLER PAD DETAILS

TYPE 'A' BASE

DIMENSIONS

NO.	ITEM	25'	30'	35'	40'
①	BOLT SPACING	7-3/8"	7-3/4"	8-1/8"	8-1/2"
②	MIN. DIAMETER OF FOUNDATION	21"	22"	23"	24"
③	DEPTH OF FOUNDATION	5'-0"	6'-0"	7'-0"	8'-0"
④	BOLT CIRCLE DIAMETER	10-1/2"	11"	11-1/2"	12"



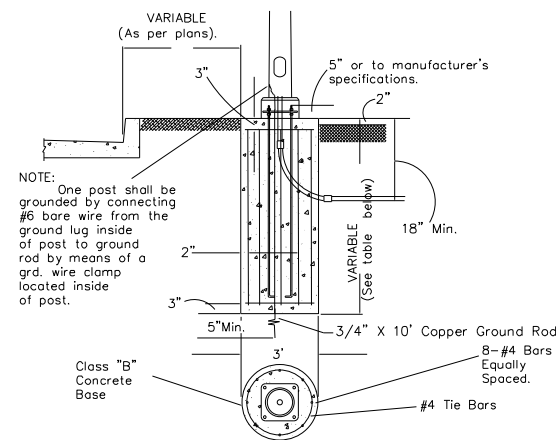
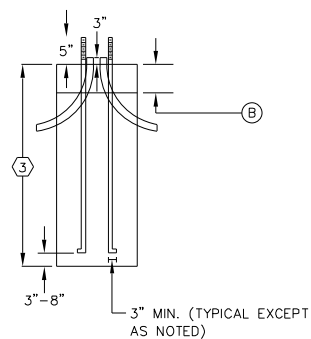
Form Made 8020-97.c.g.d

STREET LIGHT FOUNDATIONS

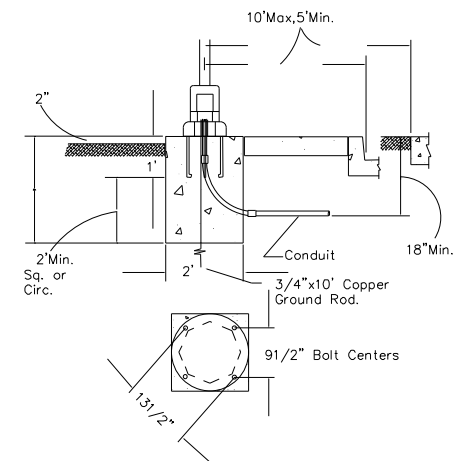
- (A) ANCHOR BOLTS.
- (B) 6" CAP TO BE POURED AFTER POLE IS ERECTED AND PLUMBED.

GENERAL NOTES FOR ALL BASES

- 1) ANCHOR BOLTS TO BE HOT-DIP GALVANIZED. (SEE SPECIFICATION.)
- 2) ANCHOR BOLTS TO BE HOT-DIP GALVANIZED. (SEE SPECIFICATION.)
- 3) BOTTOM ENDS OF ANCHOR BOLTS MUST HAVE 3" MINIMUM CONCRETE COVER.
- 4) USE BOLT POSITIONING JIF OF SUFFICIENT WEIGHT & STRENGTH TO MAINTAIN ACCURATE ANCHOR BOLT LOCATION DURING CONCRETE PLACEMENT.
- 5) CITY-AUTHORIZED INSPECTOR MUST INSPECT EACH EXCAVATION, WITH ALL FORMS, ANCHOR BOLTS, REINFORCING STEEL, CONDUIT, & CONDUIT PLUGS IN PLACE IMMEDIATELY PRIOR TO PLACING CONCRETE.
- 6) CONCRETE FOR FOUNDATIONS: MCIB AIR-ENTRAINED MIX NO. A-629-1/2-2.
- 7) FOUNDATIONS IN EARTH TO BE 1" ABOVE ANY ADJACENT EARTH & HAVE EDGES BEVELED.
- 8) FOR TYPE "A", TIE ANCHOR BOLTS NEAR THE BOTTOM. USE TWO #3 REBAR HOOPS SPACED 12", TWO #3 REBAR "U" 'S SPACED 12", OR TWO TURNS OF #3 REBAR SPIRAL WITH 12" PITCH.
- 9) EXPANSION JOINT TO BE USED WHERE PAVING ADJOINS FOUNDATION.
- 10) PLUG ALL CONDUIT OPENINGS WITH DUXSEAL OR EQUIVALENT BEFORE PLACING CONCRETE & AFTER CABLE INSTALLATION. SEE PLANS FOR NUMBER AND DIRECTION OF BENDS.
- 11) 6" CAP TO BE POURED AFTER POLE IS ERECTED AND PLUMBED.



TYPICAL B8, B10, & B12



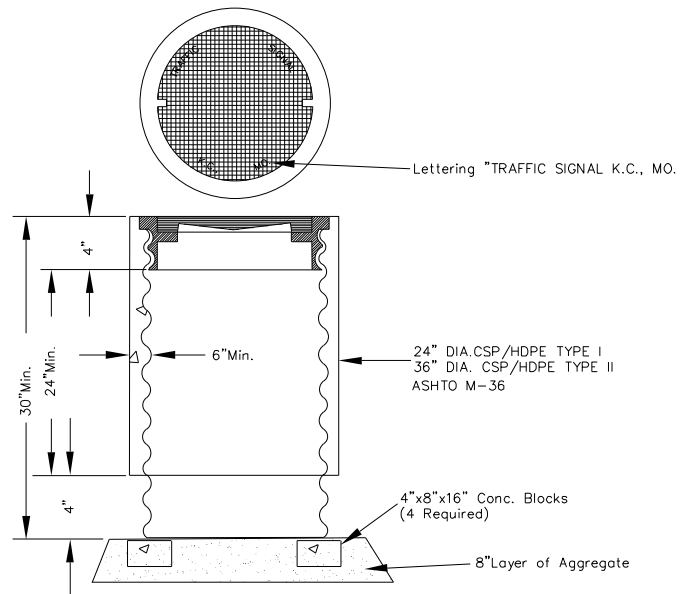
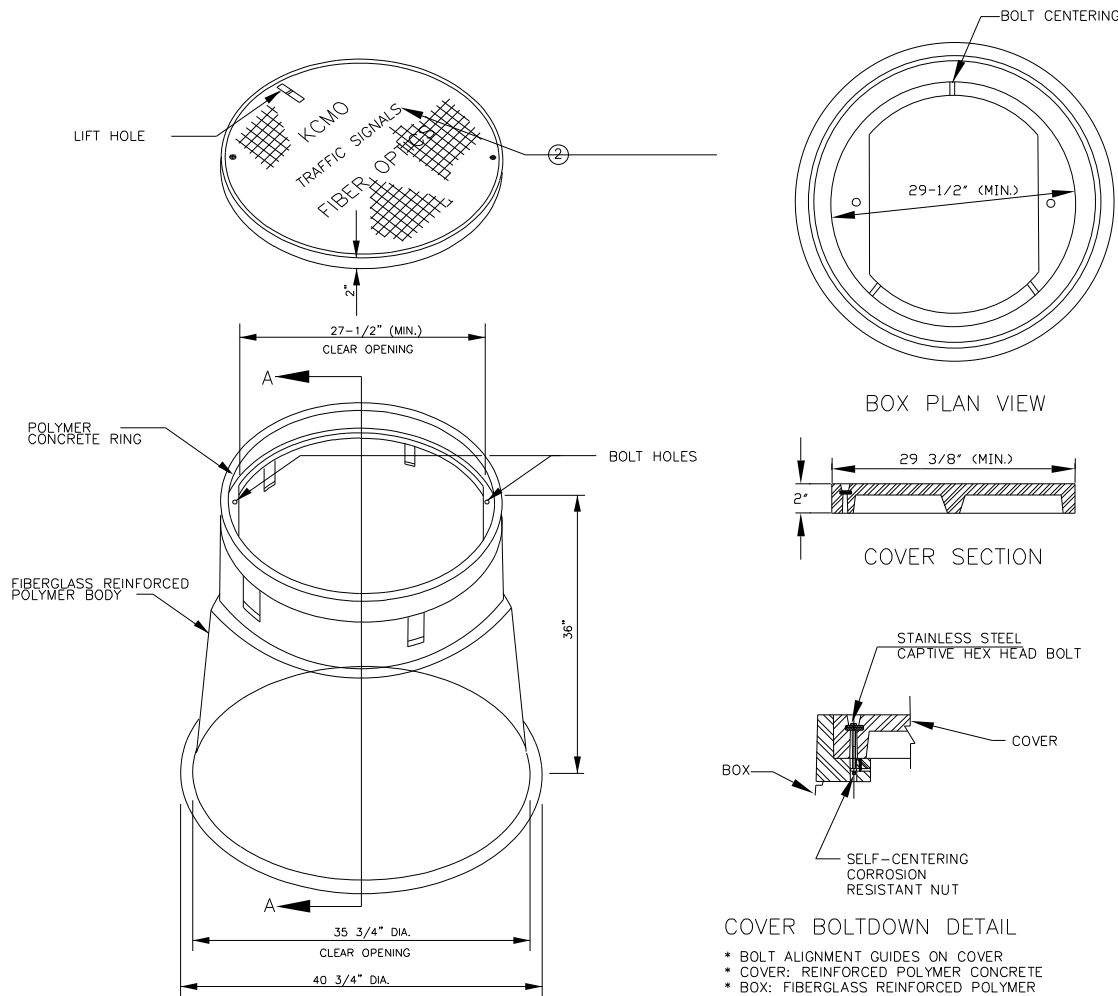
TYPE C

BASES

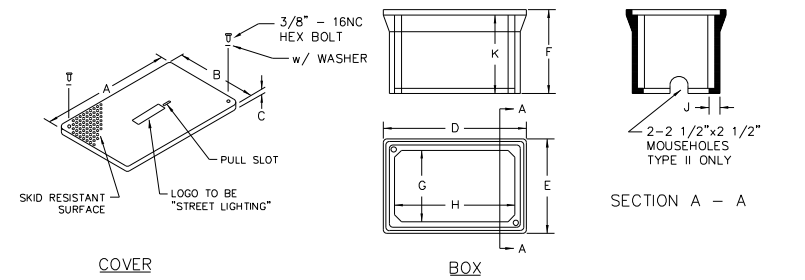
BASE TYPE	DEPTH	DIA.	ARM LENGTH	CONC. IN C.Y.	REMARKS
B8	8 FT.	3 FT.	Up to 28 FT.	2.09	
B10	10 FT.	3 FT.	29 FT. to 35 FT.	2.61	
B12	12 FT.	3 FT.	36 FT. to 46 FT.	3.14	

REV	DATE	DESCRIPTION	DESIGNED BY SMA			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION TRAFFIC SIGNAL SIGNAL DETAILS SIGNAL CONCRETE BASE DETAILS	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY JLH			FILENAME: T206.dgn				
			DRAWN BY MMO			CONTRACT NO.:				
			CHECKED BY JLH			CONTRACT NO. ***				
			APPROVED BY NKS			VOLUME: 1				
						DRAWING NO.:	SHEET NO.:			
PLOT DATE: 12/23/2022 10:07:52 AM			DATE 12-23-2022			NOT FOR CONSTRUCTION			T206	231

TRAFFIC SIGNAL PULL BOX DETAILS

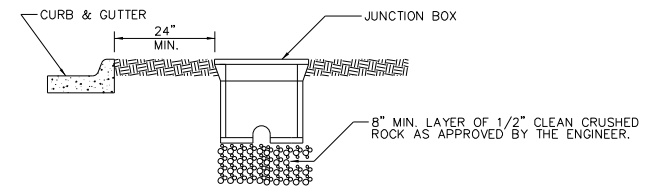


- NOTES:
1. Installation in grass area does not use concrete backfill with compacted earth.
 2. Pull box covers and rings to be installed in the street shall have machined horizontal bearing surfaces.
 3. All surroundings to be finished to match the existing.
 4. For pull box ring and cover detail see sheet TCD - 6A



TYPE	DIMENSIONS (IN.) *									
	A	B	C	D	E	F	G	H	J	K
I	12 7/8	12 7/8	3/4	14	14	12 3/4	10 1/2	10 1/2	1	12
II	18 1/2	11 1/2	3/4	20 1/2	13 1/2	12	10 1/4	17 1/4	3/8	11 1/4

* TOLERANCE
±1/4" IN ANY
DIMENSION

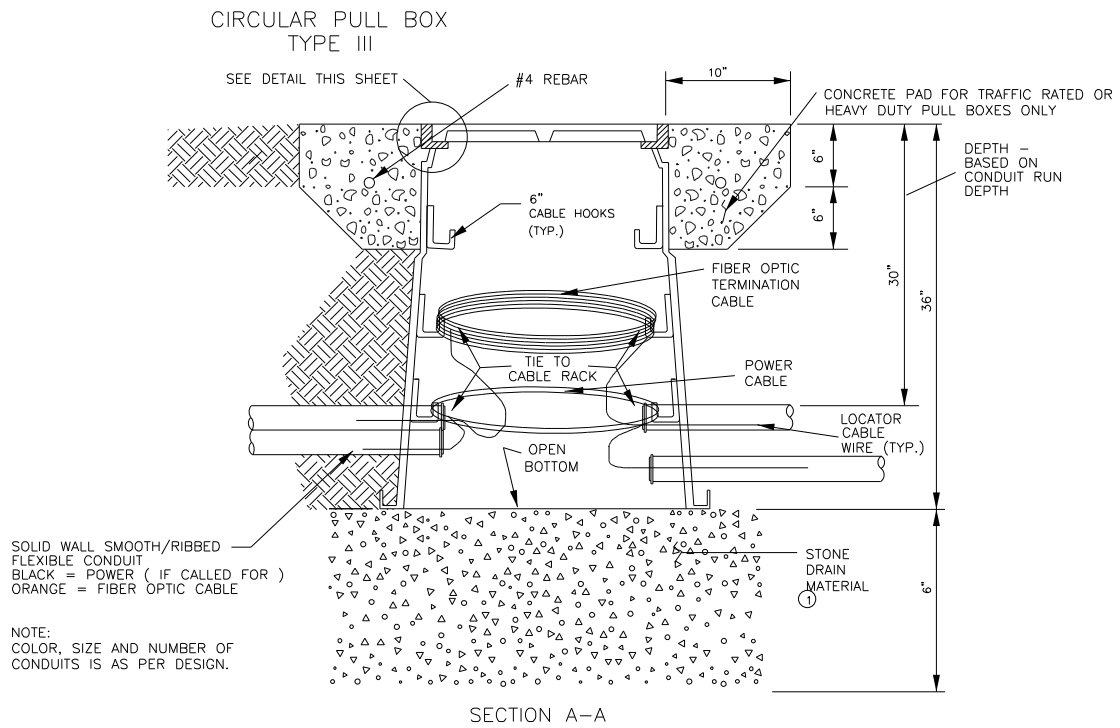


JUNCTION BOX INSTALLATION DETAIL

PULL BOX
TYPE I - II

FIBERGLASS REINFORCED POLYMER CONCRETE JUNCTION BOX DETAILS

NOT TO SCALE



- ① AGGREGATE SHALL CONFORM TO RELEVANT KCMO STANDARD SPECIFICATIONS.
- ② CIRCULAR PULL BOX COVERS SHALL BE EMBOSSED "KCMO FIBER OPTICS".
TEXT SHALL BE 4" IN HEIGHT AND CENTERED.

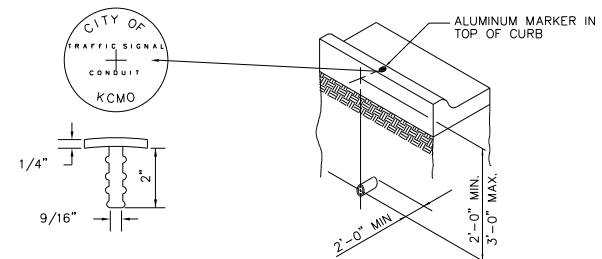
GENERAL NOTES:

PULLBOX FRAMES AND COVERS SHALL BE POLYMER CONCRETE.

PULLBOX COVERS SHALL HAVE AN APPROVED WHEEL LOAD OF 20,000 LBS AND BE UV STABILIZED.

IF SUBSURFACE CONDITIONS EXIST WHICH PROHIBIT THE PLACEMENT OF THE GROUND ROD IN A VERTICAL POSITION, THE ROD MAY BE DRIVEN AT AN OBLIQUE ANGLE NOT TO EXCEED 45 DEGREES FROM VERTICAL OR BURIED IN A TRENCH AT LEAST 30 IN. DEEP. CONNECTION TO GROUND ROD SHALL BE CADWELDED.

THE CIRCULAR PULL BOX COVER SHOULD BE SIZED TO FIT A BOX WITH A MINIMUM CLEAR OPENING OF 34 3/4 INCHES.

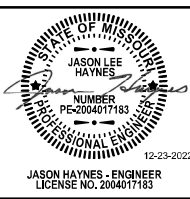


CONDUIT SHALL BE PLACED 2'-0" TO 3'-0" BELOW THE TOP OF CURB ELEVATION AND SHALL EXTEND 2'-0" MINIMUM BEYOND THE BACK OF CURB. CONDUIT SHALL BE INSTALLED TO DRAIN, AND ALL ENDS SHALL BE THREADED AND CAPPED. AN ALUMINUM MARKER SHALL BE COUNTER SUNK IN THE TOP OF THE CURB DIRECTLY OVER THE CONDUIT. ALUMINUM MARKERS WILL BE FURNISHED BY THE CONTRACTOR.

THE CONTRACTOR SHALL NOTIFY THE CITY OF KANSAS CITY, DEPARTMENT OF PUBLIC WORKS TRAFFIC DIVISION (816) 513-9870 FOR INSPECTION OF THE CONDUIT INSTALLATION. AT LEAST 24 HOURS NOTICE SHALL BE PROVIDED. THE CONDUIT SHALL NOT BE COVERED UNLESS INSPECTED AND APPROVED BY THE PROJECT ENGINEER OR HIS AUTHORIZED REPRESENTATIVE, SO AS TO ENSURE PROPER DEPTH, CORRECT CONDUIT MATERIAL, AND PROPER CONDUIT END TREATMENT AS DESCRIBED ABOVE.

CONDUIT MARKING DETAIL

REV	DATE	DESCRIPTION	DESIGNED BY	SMA
			CHECKED BY	JLH
			DRAWN BY	MMO
			CHECKED BY	JLH
			APPROVED BY	NKS
PLOT DATE: 12/23/2022			10:07:54 AM	DATE 12-23-2022



ISSUED FOR BID

DATE: 12-23-2022



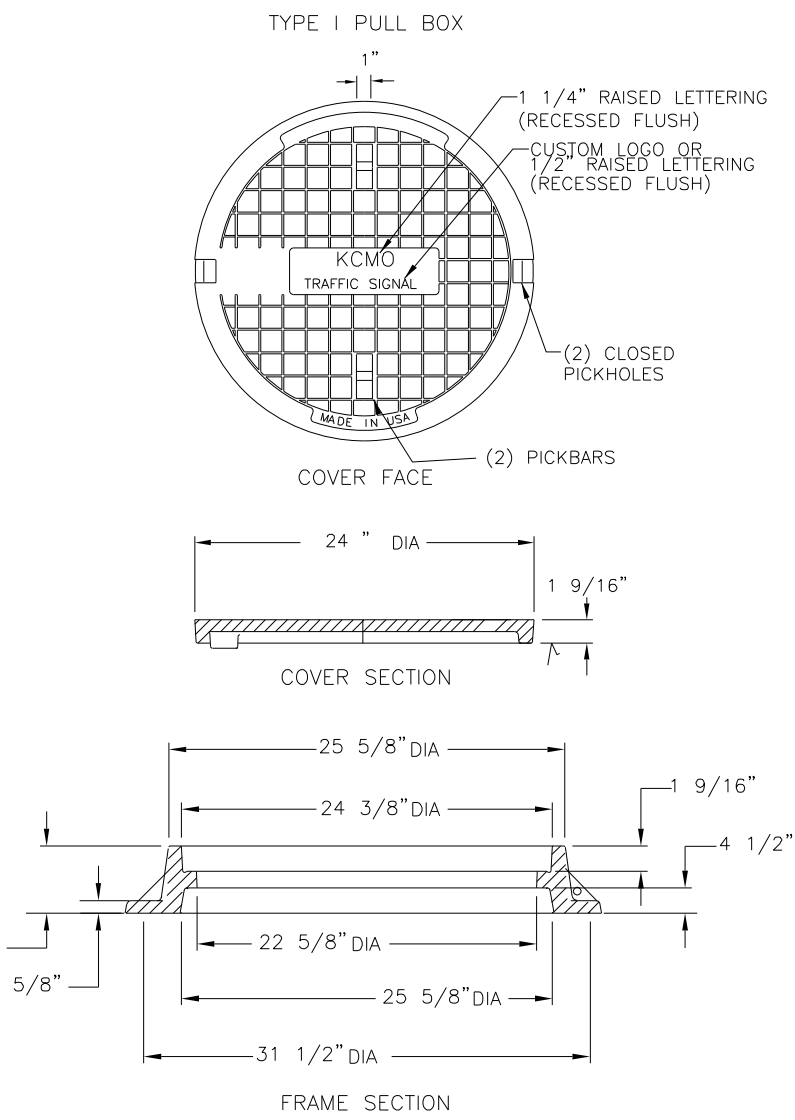
NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

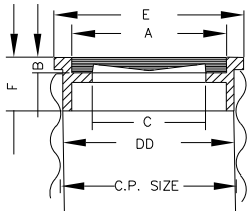
TRAFFIC SIGNAL
SIGNAL DETAILS
SIGNAL PULL BOX DETAILS

SCALE FOR 22"x34":	
NOT TO SCALE	
FILENAME:	
T207.dgn	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
I	
DRAWING NO.:	SHEET NO.
T207	23

TRAFFIC SIGNAL PULL BOX DETAILS

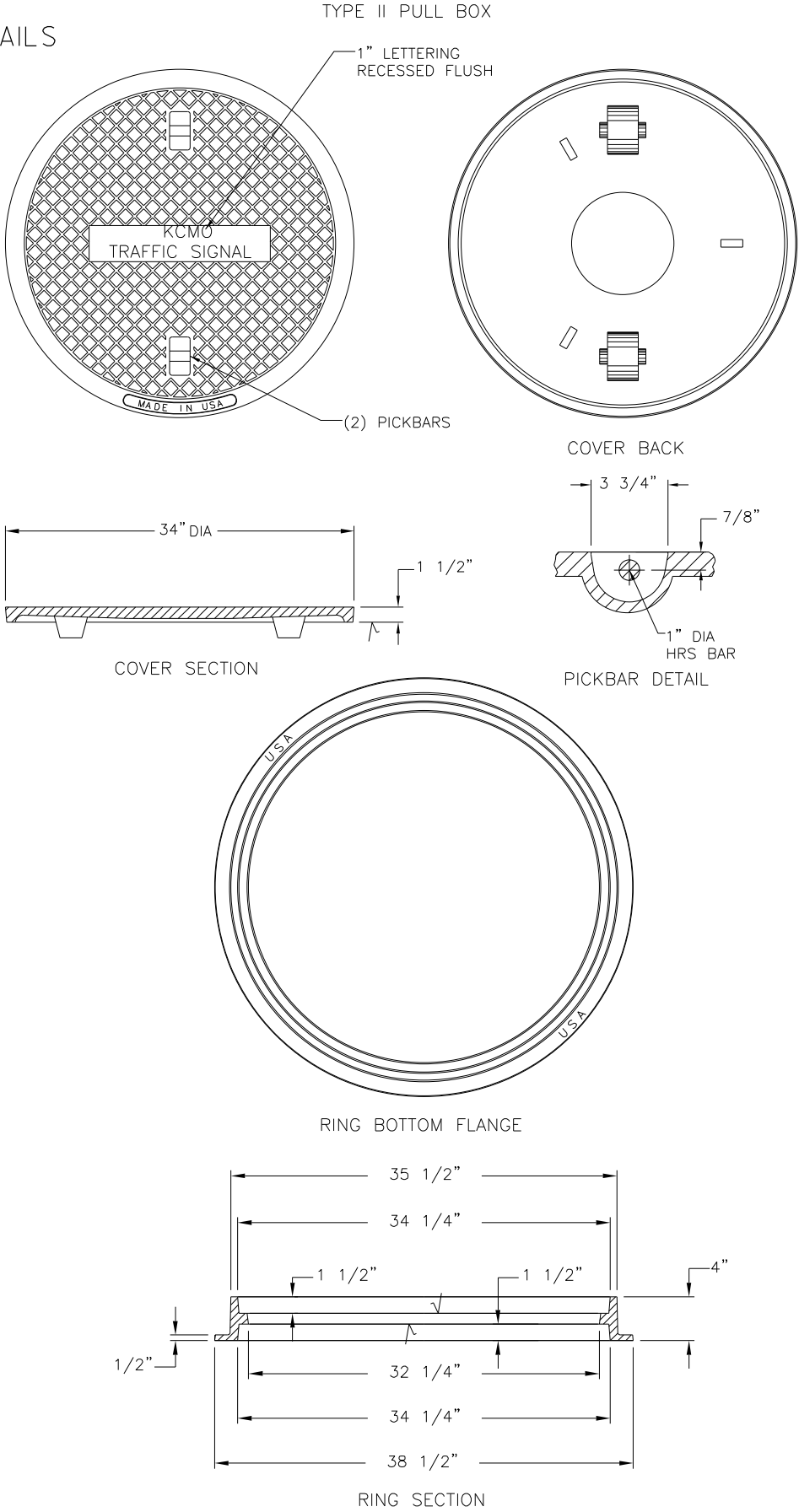


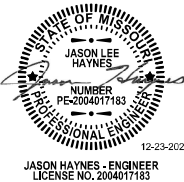
The above ring and lid dimensions for Type 1 pull boxes are applicable if installed within a traveled way. If Type 1 pull boxes are installed within a grass area, the following ring (reversible) and lid dimensions can be used.



Dimensions in Inches

Pipe Size	A	B	C	DD	E	F
24	22 1/2	1 1/2	20 1/2	23 1/2	26 1/2	4



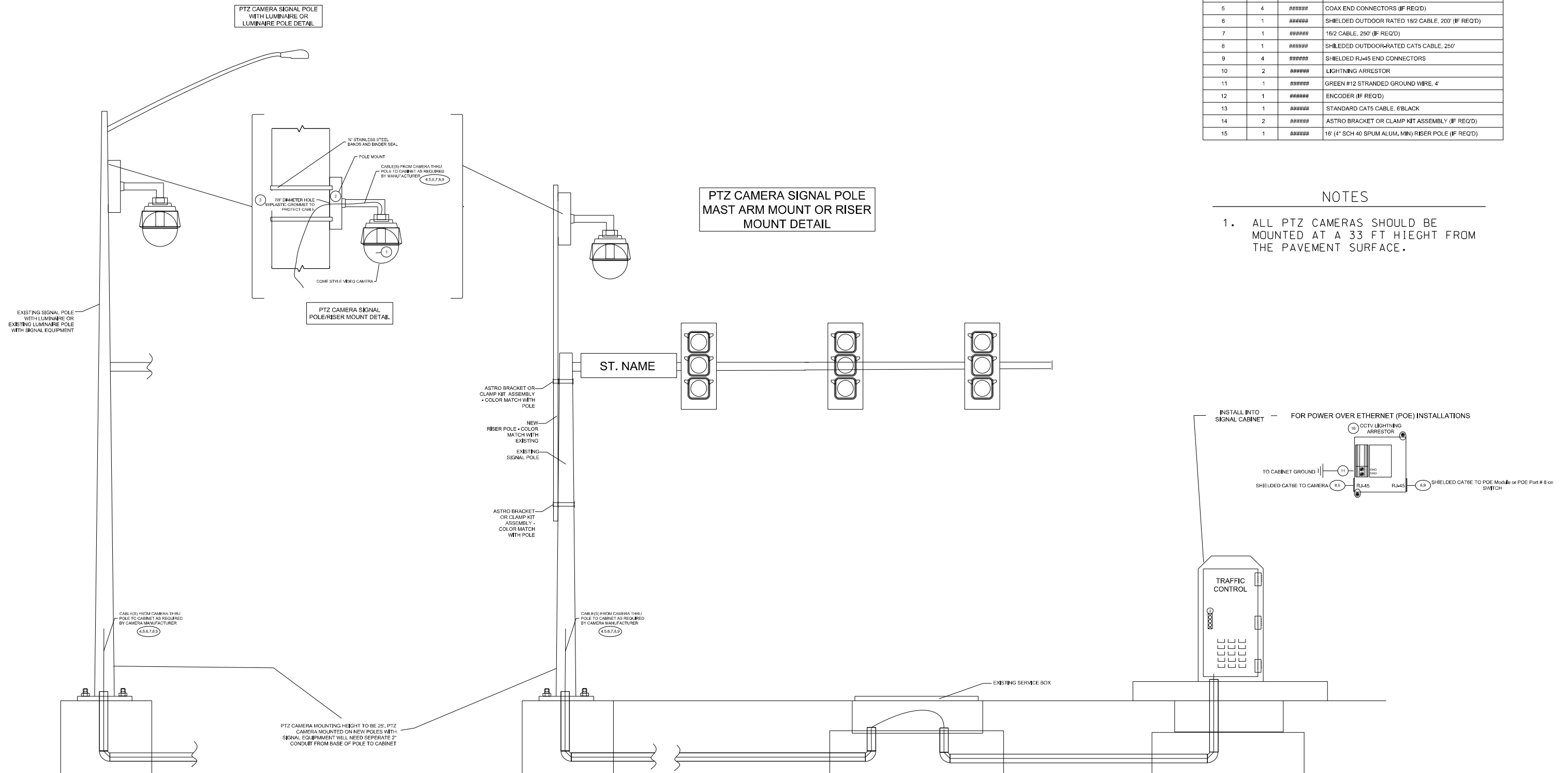
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			CHECKED BY	JLH				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-380-2700 Certificate of Authority: 000856			
			DRAWN BY	MMO							
			CHECKED BY	JLH							
			APPROVED BY	NKS							
PLOT DATE: 12/23/2022			10:07:56 AM		DATE	12-23-2022	NOT FOR CONSTRUCTION				

TRAFFIC SIGNAL PTZ CAMERA INSTALL DETAILS

ITEM	QTY	PART NO.	DESCRIPTION
1	1	#####	PTZ CAMERA (SEE SPECIFICATIONS)
2	1	#####	CAMERA POLE MOUNT KIT
3	2	#####	PLASTIC GROMMET
4	1	#####	RG-6 COAX CABLE, 200' (IF REQ'D)
5	4	#####	COAX END CONNECTORS (IF REQ'D)
6	1	#####	SHIELDED OUTDOOR RATED 18/2 CABLE, 200' (IF REQ'D)
7	1	#####	18/2 CABLE, 250' (IF REQ'D)
8	1	#####	SHIELDED OUTDOOR-RATED CAT5 CABLE, 250'
9	4	#####	SHIELDED RJ-45 END CONNECTORS
10	2	#####	LIGHTNING ARRESTOR
11	1	#####	GREEN #12 STRANDED GROUND WIRE, 4'
12	1	#####	ENCODER (IF REQ'D)
13	1	#####	STANDARD CAT5 CABLE, 6'BLACK
14	2	#####	ASTRO BRACKET OR CLAMP KIT ASSEMBLY (IF REQ'D)
15	1	#####	16" (4" SCH 40 SPUM ALUM. MIN) RISER POLE (IF REQ'D)

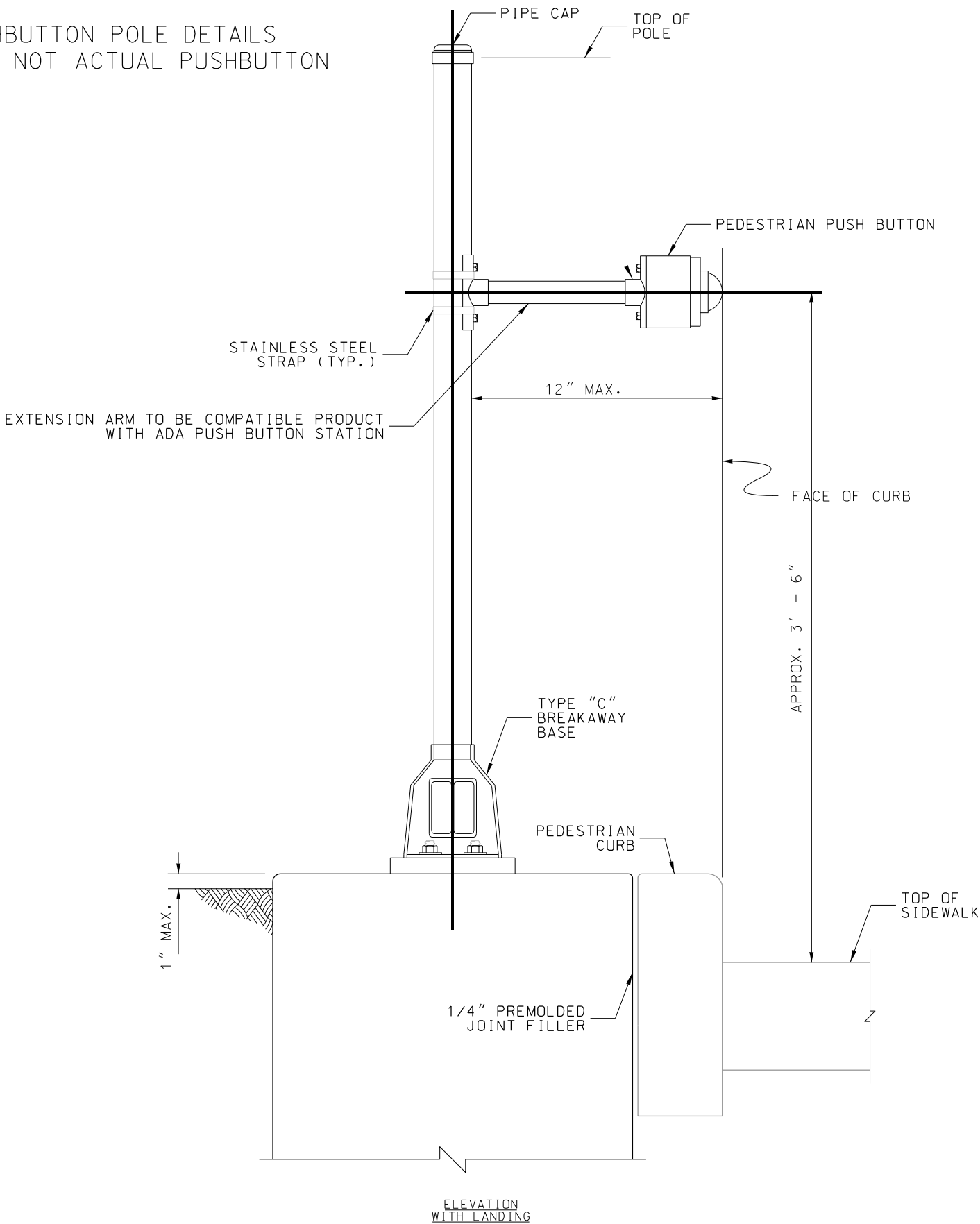
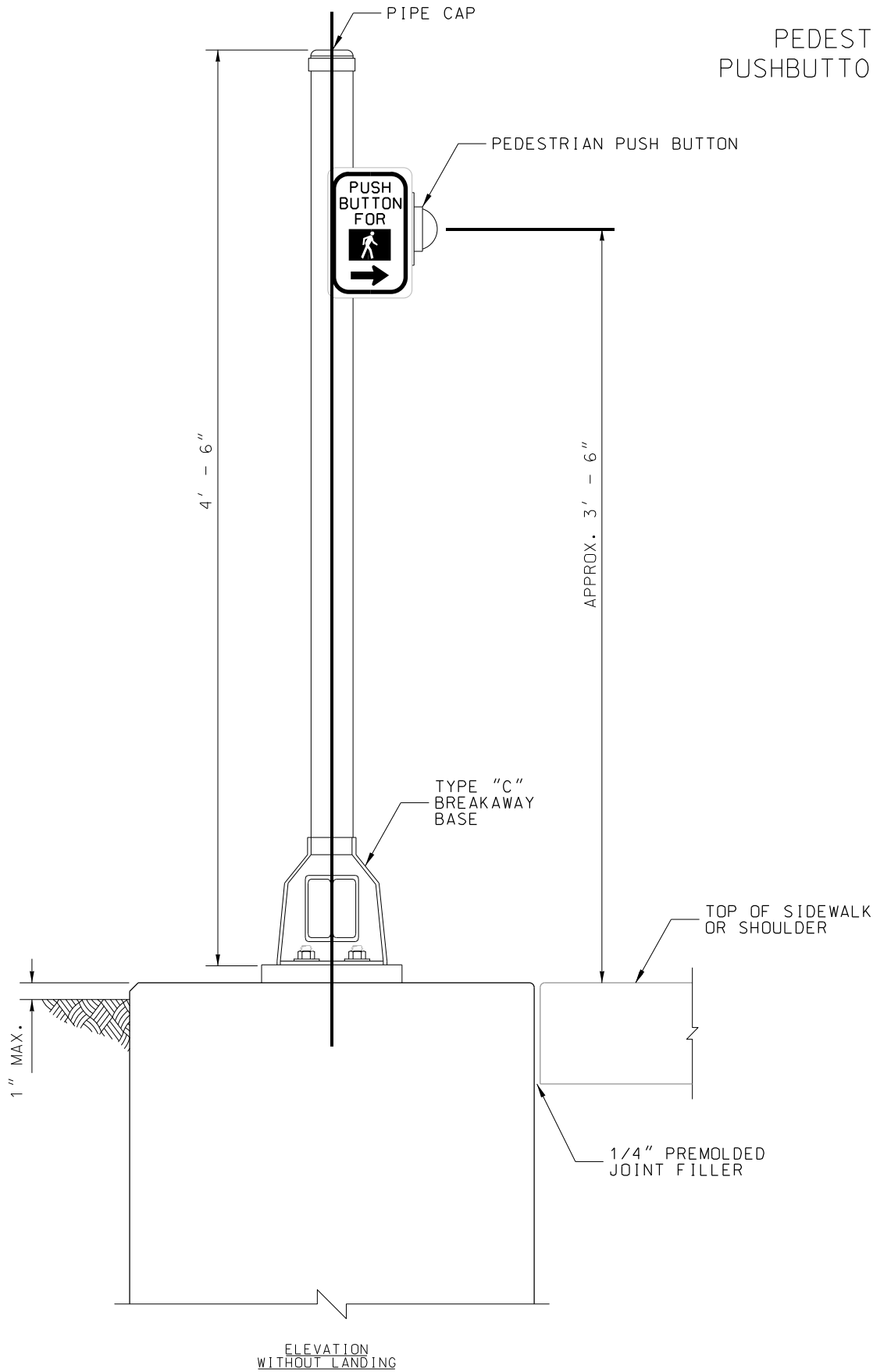
NOTES

1. ALL PTZ CAMERAS SHOULD BE MOUNTED AT A 33 FT HIEGHT FROM THE PAVEMENT SURFACE.



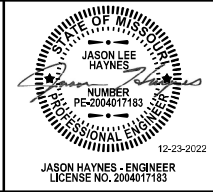
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			CHECKED BY JLH			FILENAME: T209.dgn				
			DRAWN BY MMO			CONTRACT NO.:				
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			APPROVED BY NKS			VOLUME: 1				
						DRAWING NO.:	SHEET NO.:			
PLOT DATE: 12/23/2022			DATE: 12-23-2022	NOT FOR CONSTRUCTION				T209		234

PEDESTRIAN PUSHBUTTON POLE DETAILS
PUSHBUTTONS SHOWN NOT ACTUAL PUSHBUTTON



REV	DATE	DESCRIPTION

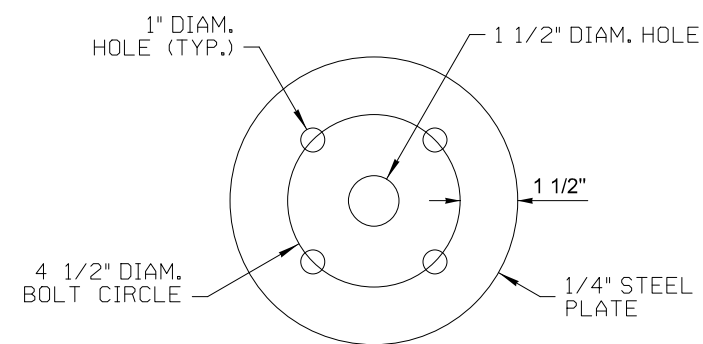
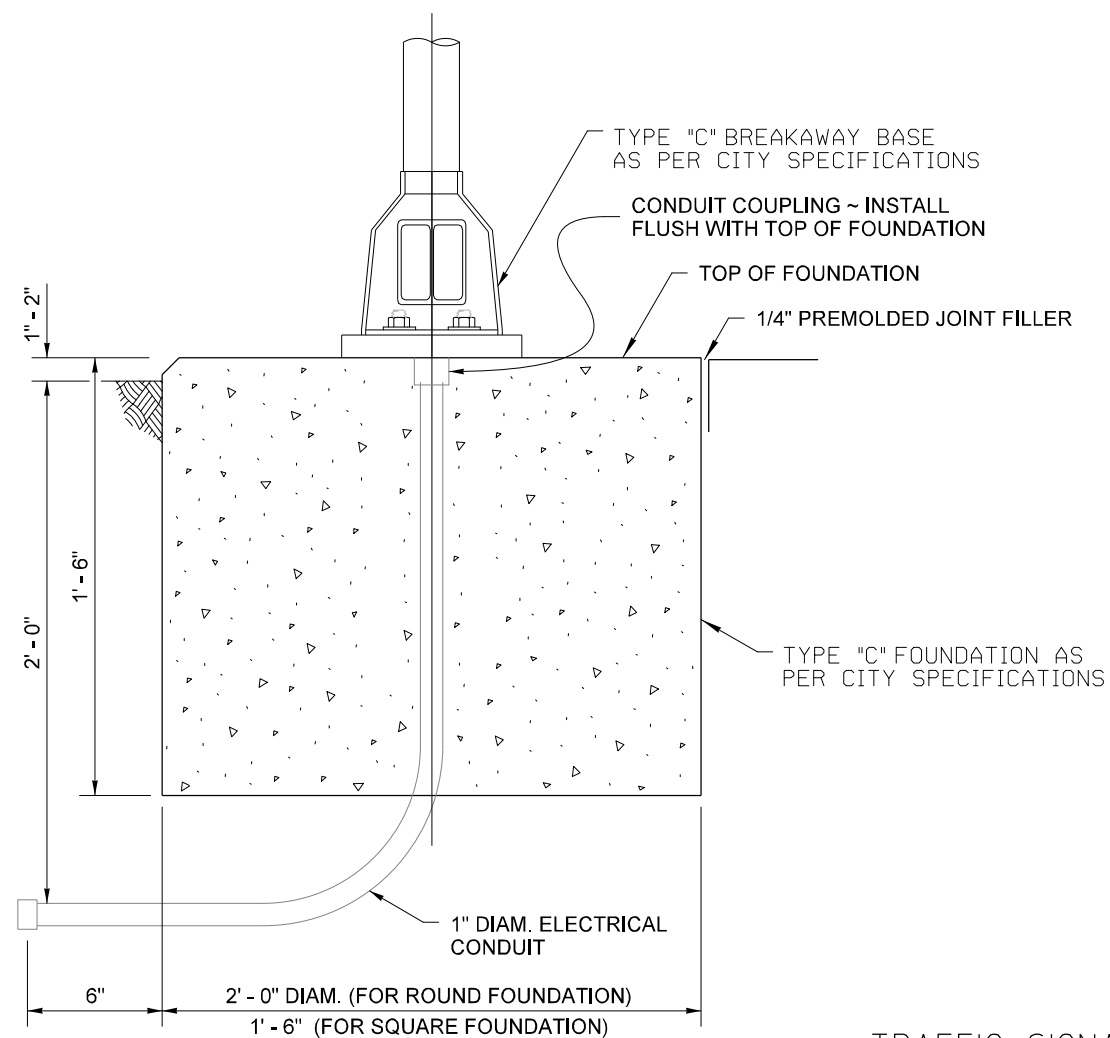
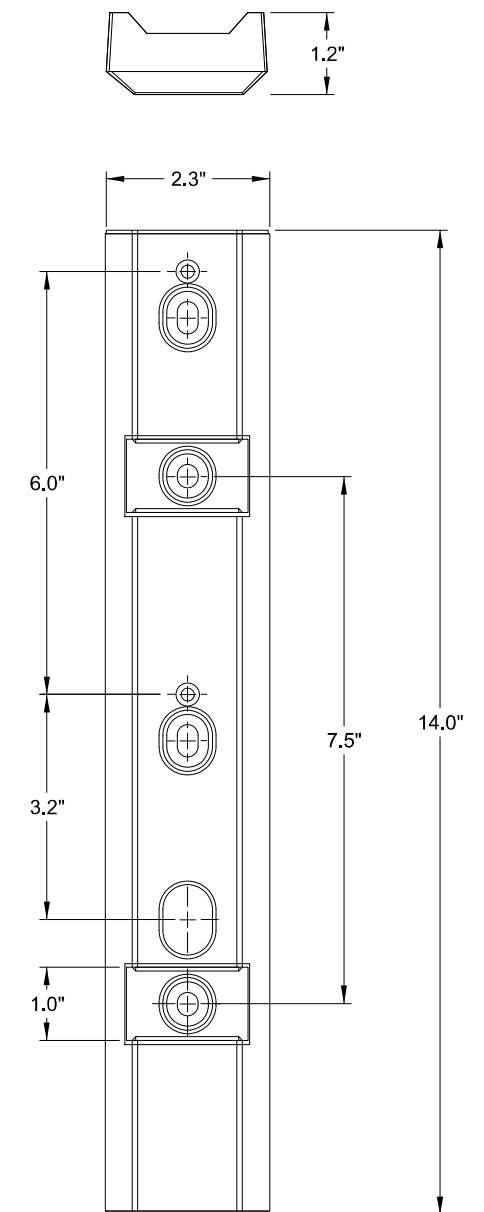
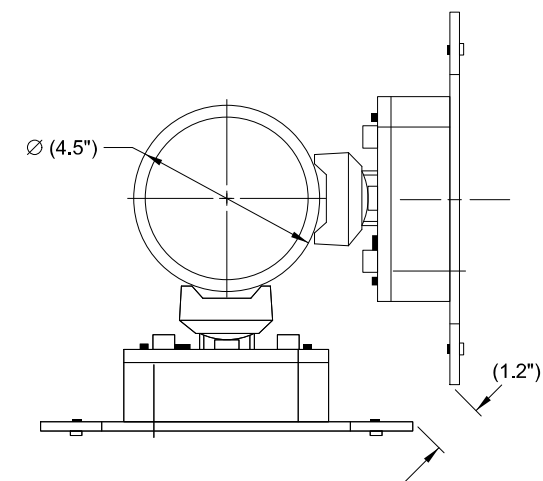
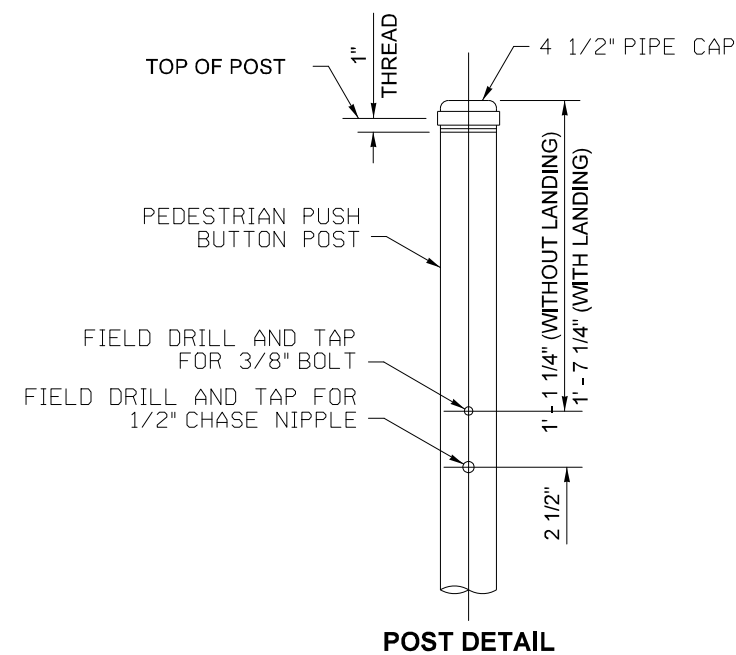
DESIGNED BY	SMA
CHECKED BY	JLH
DRAWN BY	MMO
CHECKED BY	JLH
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION
TRAFFIC SIGNAL SIGNAL DETAILS PEDESTRIAN PUSHBUTTON POLE DETAILS

SCALE FOR 22"x34": NOT TO SCALE	FILENAME: T210.dgn
CONTRACT NO.: CONTRACT NO. ***	VOLUME: 1
DRAWING NO.: T210	SHEET NO.: 235

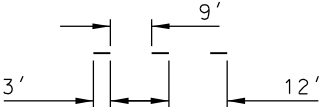
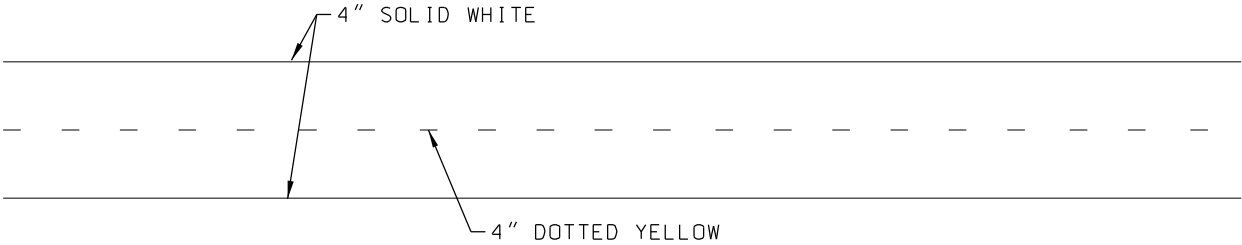


TRAFFIC SIGNAL PEDESTRIAN PUSHBUTTON POLE DETAILS

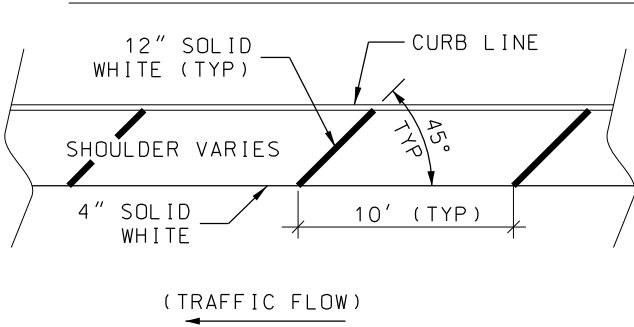
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			CHECKED BY	JLH						VOLUME: 1
			APPROVED BY	NKS						DRAWING NO.: T211
PLOT DATE: 12/23/2022		10:08:03 AM	DATE	12-23-2022			NOT FOR CONSTRUCTION		SHEET NO.: 236	

GENERAL NOTES

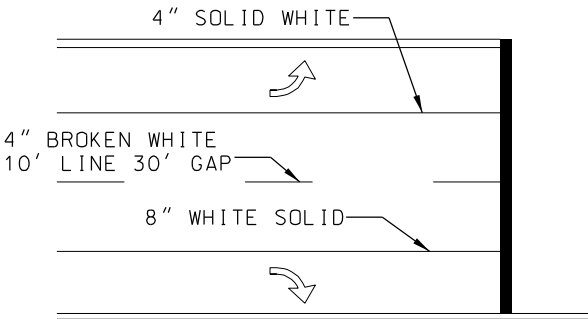
1. ALL STATIONS AND OFFSETS ON THE SIGNING & STRIPING LAYOUTS ARE BASED ON CL NORTHBOUND TRACK UNLESS OTHERWISE NOTED.
2. QUANTITY FOR REMOVAL OF EXISTING PAVEMENT MARKINGS IS ONLY FOR LIMITS OUTSIDE THE ASPHALT PAVEMENT REMOVAL AND OUTSIDE AREAS WITH FULL DEPTH HMAC PLACEMENT.
3. MATCH EXISTING STRIPING/ LANE WIDTHS, COLORS, AND PATTERNS IN AREAS OUTSIDE LIMITS OF PROPOSED ASPHALT PAVEMENT/ CONSTRUCTION AREAS.
4. EXISTING STREET NAME SIGNS OR REGULATORY SIGNS THAT ARE ATTACHED TO THE EXISTING SIGNAL POLES ARE NOT SHOWN ON THE SIGNING AND STRIPING LAYOUTS. REFER TO THE SIGNAL LAYOUT SHEETS FOR SIGN REMOVALS OR SIGNS TO REMAIN.
5. ALL EXISTING NO PARKING SIGNS ARE ATTACHED/ MOUNTED ON EXISTING LIGHT POLES (UNLESS OTHERWISE NOTED).
6. 24-INCH SOLID WHITE PAVEMENT MARKING AT CONTINENTAL CROSSWALKS SHALL BE 10 FT WIDE, WITH 24-INCH GAPS CENTERED AT BOTH SIDES OF THE WHEELCHAIR RAMPS.
7. 24-INCH SOLID WHITE PAVEMENT MARKING STOP BAR SHALL BE AT 4 FT MINIMUM FROM THE CROSSWALK.
8. ALL LANE WIDTH DIMENSIONS SHOWN ARE FROM THE EDGE OF PAVEMENT OR EDGE SHOULDER STRIPE TO THE CENTER OF STRIPING.
9. ALL OTHER EXISTING SPECIAL SIGNS, SUCH AS PRIVATE UTILITY SIGNS, AND PRIVATE BUSINESS SIGNS, SHALL BE PROTECTED DURING CONSTRUCTION AND/ OR REMOVED AND REINSTALLED AFTER CONSTRUCTION IS COMPLETED (NOT A SEPARATE PAY ITEM, INCIDENTAL TO THE PRICE OF SIGNING & STRIPING).
10. FOR LONGITUDINAL CROSSWALKS, A MINIMUM 6" CLEAR DISTANCE SHALL BE PROVIDED TO THE CURB FACE. IF THE LAST CROSSWALK LINE FALLS INTO THIS DISTANCE IT MUST BE OMITTED.
11. FOR DIVIDED ROADWAYS, ADJUSTMENTS IN SPACING OF THE LONGITUDINAL CROSSWALK LINES SHALL BE MADE IN THE MEDIAN SO THAT THE CROSSWALK LINES ARE MAINTAINED IN THEIR PROPER LOCATION ACROSS THE TRAVEL PORTION OF THE ROADWAY.
12. AT SKEWED CROSSWALKS, THE CROSSWALK LINES SHALL REMAIN PARALLEL TO THE LANE LINES.
13. FINAL PLACEMENT OF STOP BAR/ YIELD TRIANGLES AND CROSSWALK SHALL BE APPROVED BY THE ENGINEER IN THE FIELD.
14. ALL SIGN PANELS THAT ARE TO BE MOUNTED ON EXISTING OR PROPOSED LIGHT POLES OR OCS POLES SHALL BE PLACED AT AN EIGHT FEET MOUNTING HEIGHT. ALL SIGN PANELS SHALL HAVE A SEVEN FOOT MINIMUM VERTICAL CLEARANCE FROM THE VERY BOTTOM OF SIGN.
15. CONTRACTOR SHALL CONFIRM WITH THE CITY'S TRAFFIC DIVISION THE PARKING TIME-OF-DAY AND PARKING TIME LENGTH RESTRICTIONS FOR EACH BLOCK PRIOR TO ORDERING/MANUFACTURING PARKING SIGNS.
16. PAVEMENT MARKING STRIPING (4" SOLID YELLOW, 4" SOLID WHITE, HASHMARKS, ETC.) ON ASPHALT SHALL BE THERMOPLASTIC AND PAVEMENT MARKING ON CONCRETE SHALL BE EPOXY.
17. INTERSECTION MARKING (STOP BARS, CROSS WALKS, TURN ARROWS, ETC.) ON ASPHALT SHALL BE PRE-FORMED THERMOPLASTIC AND INTERSECTION MARKING ON CONCRETE SHALL BE INLAID COLD PLASTIC.



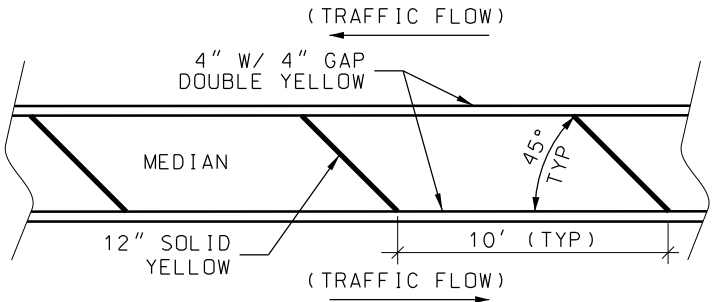
PATTERN FOR DOTTED YELLOW CYCLE TRACK LINES



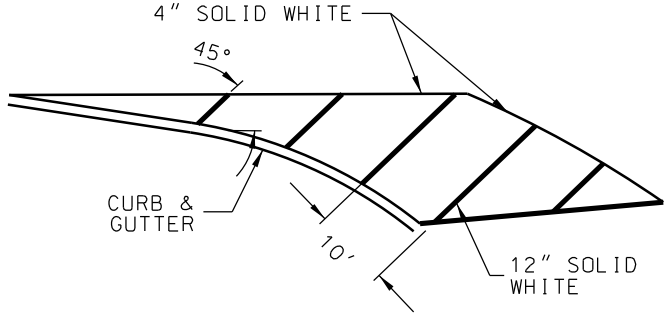
SHOULDER PVMT MARKINGS
NTS



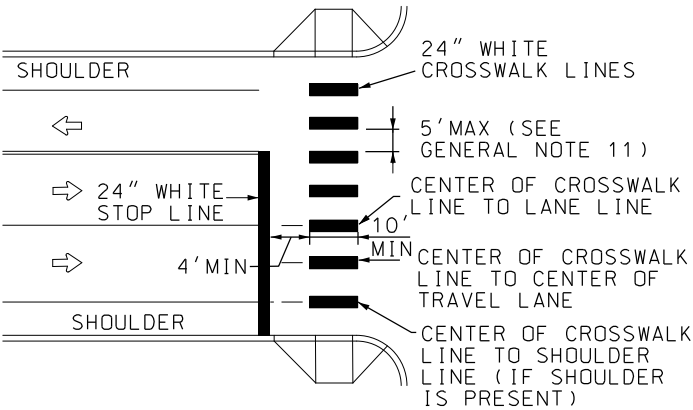
TYP APPLICATION OF LANE MARKINGS
NTS



MEDIAN PVMT MARKINGS
NTS

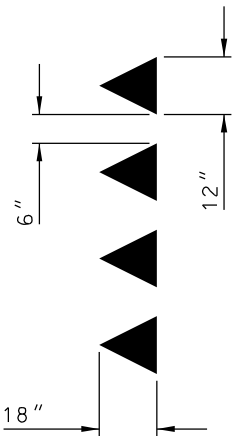


CROSSHATCH PVMT MARKINGS
NTS



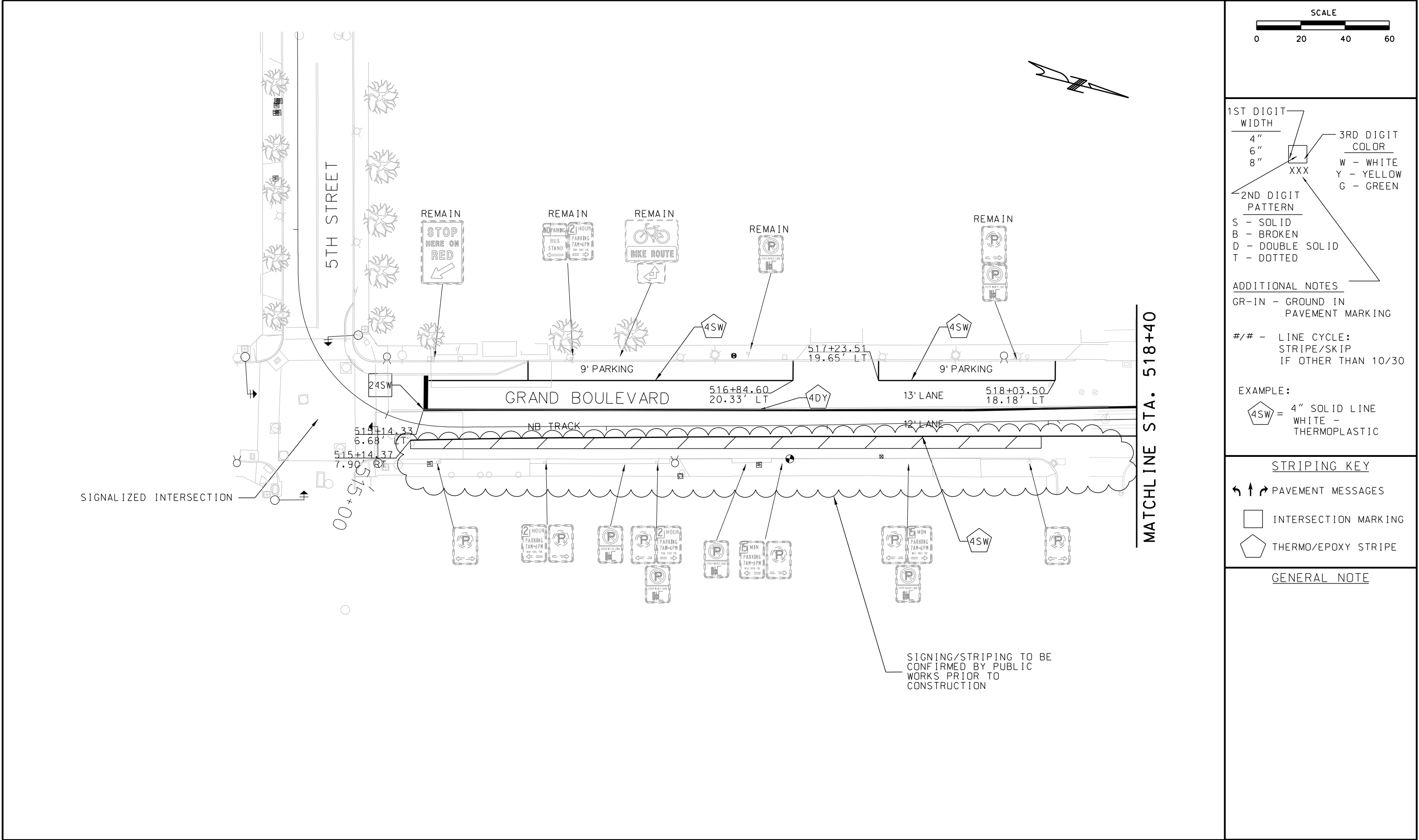
HIGH-VISIBILITY LONGITUDINAL CROSSWALK
AT CONTROLLED APPROACH
NTS

PATTERN FOR YIELD LINE LAYOUT



REV	DATE	DESCRIPTION	DESIGNED BY EJR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: SIGNING & STRIPING - GENERAL NOTES CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: SHEET NO.: S001 237		
			CHECKED BY NWH				HDR Engineering, Inc.				Consult Inc
			DRAWN BY EJR			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873				
			CHECKED BY NWH								
			APPROVED BY NKS								
PLOT DATE: 12/23/2022			1:05:11 PM	DATE	12-23-2022	NOT FOR CONSTRUCTION					

SIGNING AND STRIPING
GENERAL NOTES



SCALE

0

20

40

60

1ST DIGIT
WIDTH

4"
6"
8"

3RD DIGIT
COLOR

W - WHITE
Y - YELLOW
G - GREEN

2ND DIGIT
PATTERN

S - SOLID
B - BROKEN
D - DOUBLE SOLID
T - DOTTED

ADDITIONAL NOTES

GR-IN - GROUND IN
PAVEMENT MARKING

#/# - LINE CYCLE:
STRIPE/SKIP
IF OTHER THAN 10/30

EXAMPLE:
4SW = 4" SOLID LINE
WHITE -
THERMOPLASTIC

STRIPING KEY

↩ ↪ ↻

 PAVEMENT MESSAGES

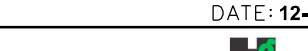
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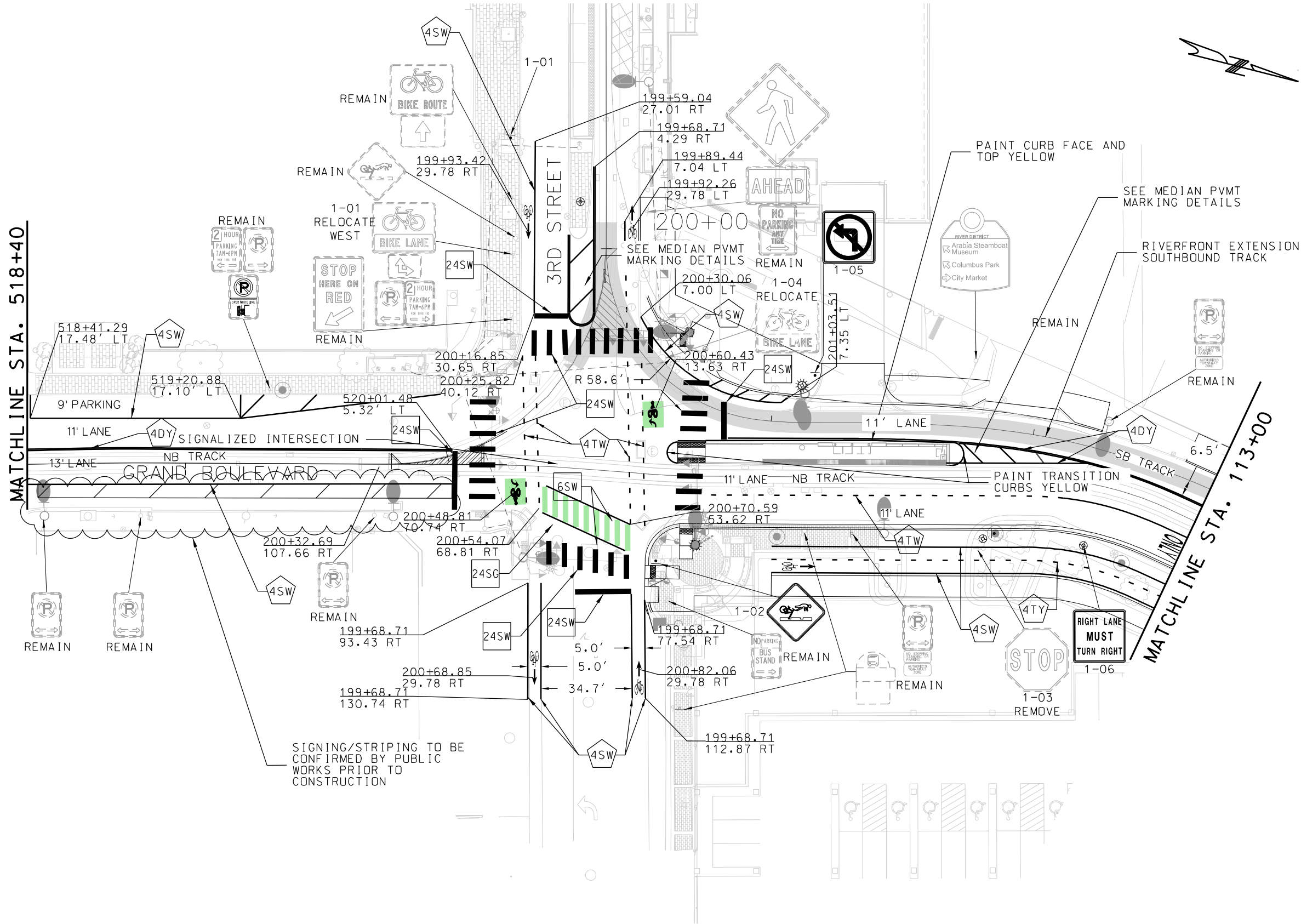
 INTERSECTION MARKING

⬡

 THERMO/EPOXY STRIPE

GENERAL NOTE

REV		DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
				CHECKED BY	NWH			 HDR Engineering, Inc.		 HG Consult Inc.		SIGNING AND STRIPING PLAN STA BEGIN TO STA 518+40	FILENAME: Signing and Striping Plan NB Sta
				DRAWN BY	EJR			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873			CONTRACT NO.: CONTRACT NO. ***
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				APPROVED BY	NKS								DRAWING NO.: SHEET NO.:
PLOT DATE: 12/23/2022				1:05:17 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION			S100	238	



SCALE
0 20 40 60

1ST DIGIT
WIDTH
4"
6"
8"

3RD DIGIT
COLOR
W - WHITE
Y - YELLOW
G - GREEN

2ND DIGIT
PATTERN
S - SOLID
B - BROKEN
D - DOUBLE SOLID
T - DOTTED

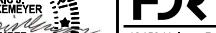
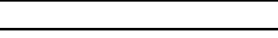
ADDITIONAL NOTES
GR-IN - GROUND IN
PAVEMENT MARKING

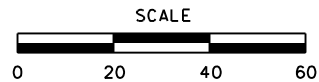
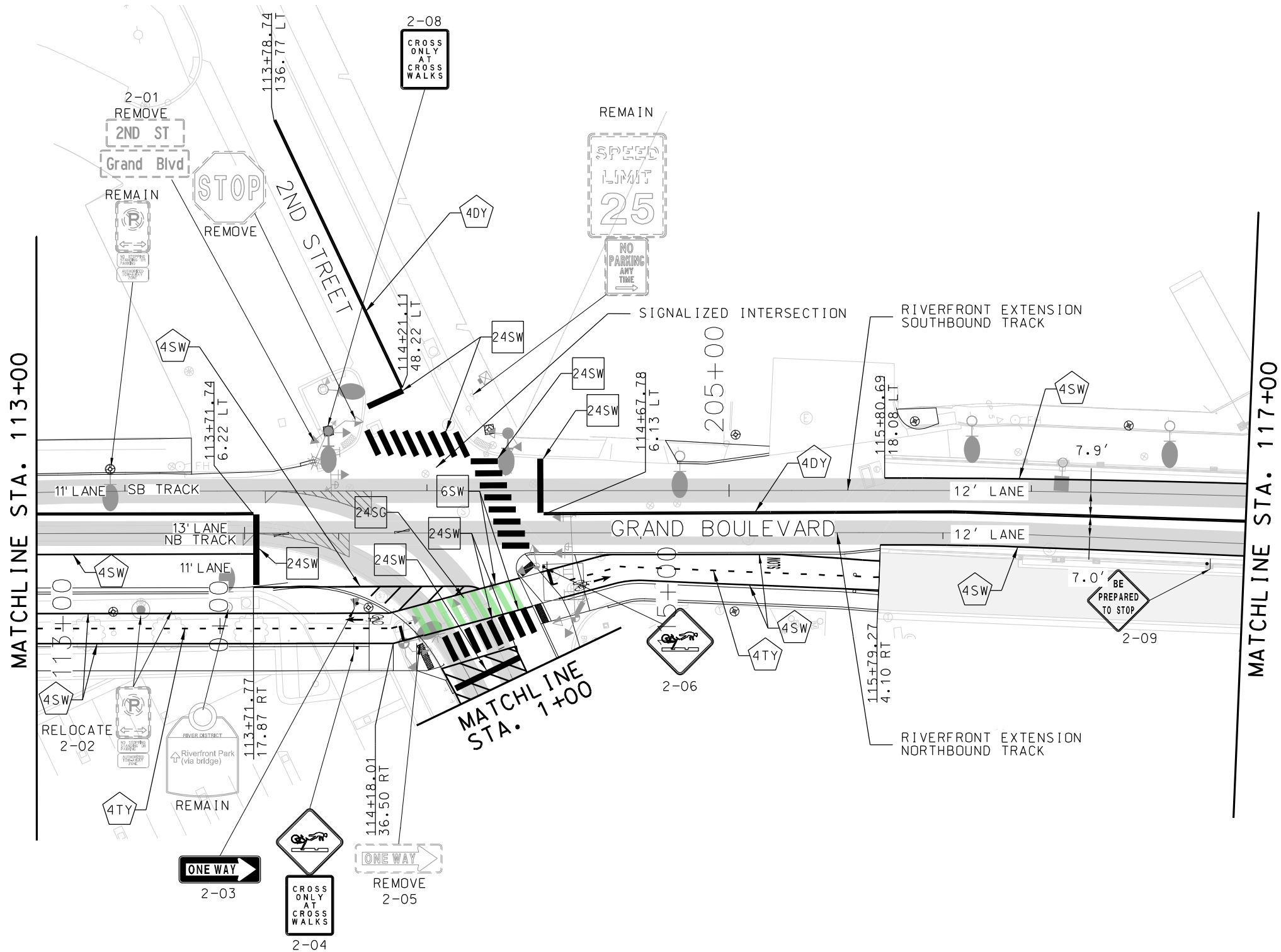
#/# - LINE CYCLE:
STRIPE/SKIP
IF OTHER THAN 10/30

EXAMPLE:
4SW = 4" SOLID LINE
WHITE -
THERMOPLASTIC

STRIPING KEY
↩ ↪ ↻ PAVEMENT MESSAGES
□ INTERSECTION MARKING
◡ THERMO/EPOXY STRIPE

GENERAL NOTE

REV DATE DESCRIPTION			DESIGNED BY EJR			ISSUED FOR BID DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'			
			CHECKED BY NWH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			 H Consult Inc. 9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873		FILENAME: Signing and Striping Plan NB Sta	
			DRAWN BY EJR			NOT FOR CONSTRUCTION			SIGNING AND STRIPING PLAN STA 518+40 TO STA 113+00		CONTRACT NO.: CONTRACT NO. ...	
			CHECKED BY NWH								VOLUME: 1	
			APPROVED BY NKS								DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022			1:05:21 PM	DATE	12-23-2022			S101		239		



1ST DIGIT
WIDTH
4"
6"
8"

3RD DIGIT
COLOR
W - WHITE
Y - YELLOW
G - GREEN

2ND DIGIT
PATTERN
S - SOLID
B - BROKEN
D - DOUBLE SOLID
T - DOTTED

ADDITIONAL NOTES
GR-IN - GROUND IN
PAVEMENT MARKING

#/# - LINE CYCLE:
STRIPE/SKIP
IF OTHER THAN 10/30

EXAMPLE:
4SW = 4" SOLID LINE
WHITE -
THERMOPLASTIC

STRIPING KEY

↩ ↪ PAVEMENT MESSAGES

□ INTERSECTION MARKING

⬡ THERMO/EPOXY STRIPE

GENERAL NOTE

REV	DATE	DESCRIPTION

DESIGNED BY	EJR
CHECKED BY	NWH
DRAWN BY	EJR
CHECKED BY	NWH
APPROVED BY	NKS

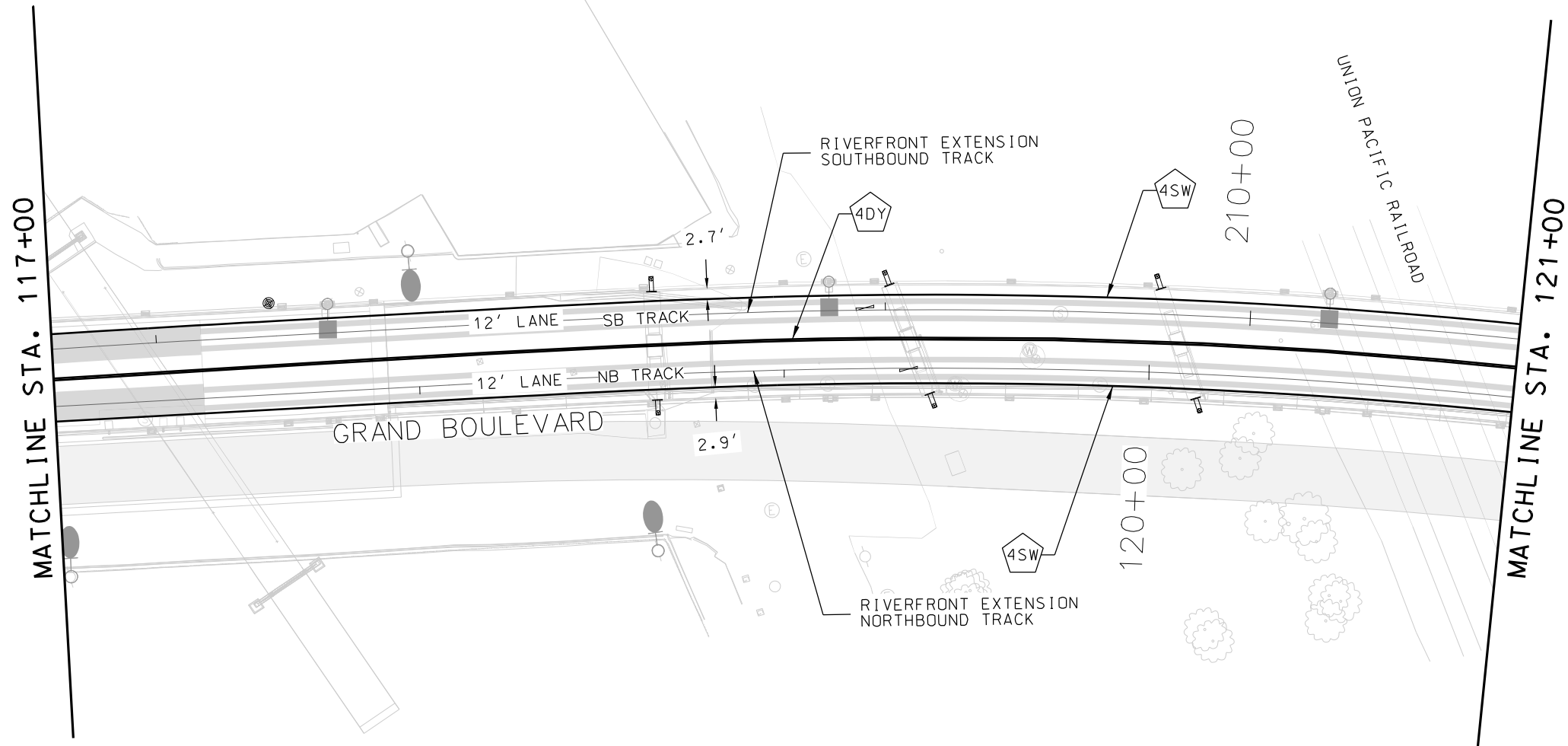


ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	Consult Inc. 9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SIGNING AND STRIPING PLAN
STA 113+00 TO STA 117+00

SCALE FOR 22"x34": 1" = 20'	
FILENAME: Signing and Striping Plan NB Sta 113+00 - 117+00	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.: S102	SHEET NO.: 240



1ST DIGIT WIDTH	3RD DIGIT COLOR
4"	W - WHITE
6"	Y - YELLOW
8"	G - GREEN
2ND DIGIT PATTERN	
S - SOLID	
B - BROKEN	
D - DOUBLE SOLID	
T - DOTTED	

ADDITIONAL NOTES

GR-IN - GROUND IN PAVEMENT MARKING

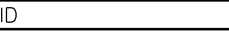
#/# - LINE CYCLE: STRIPE/SKIP IF OTHER THAN 10/30

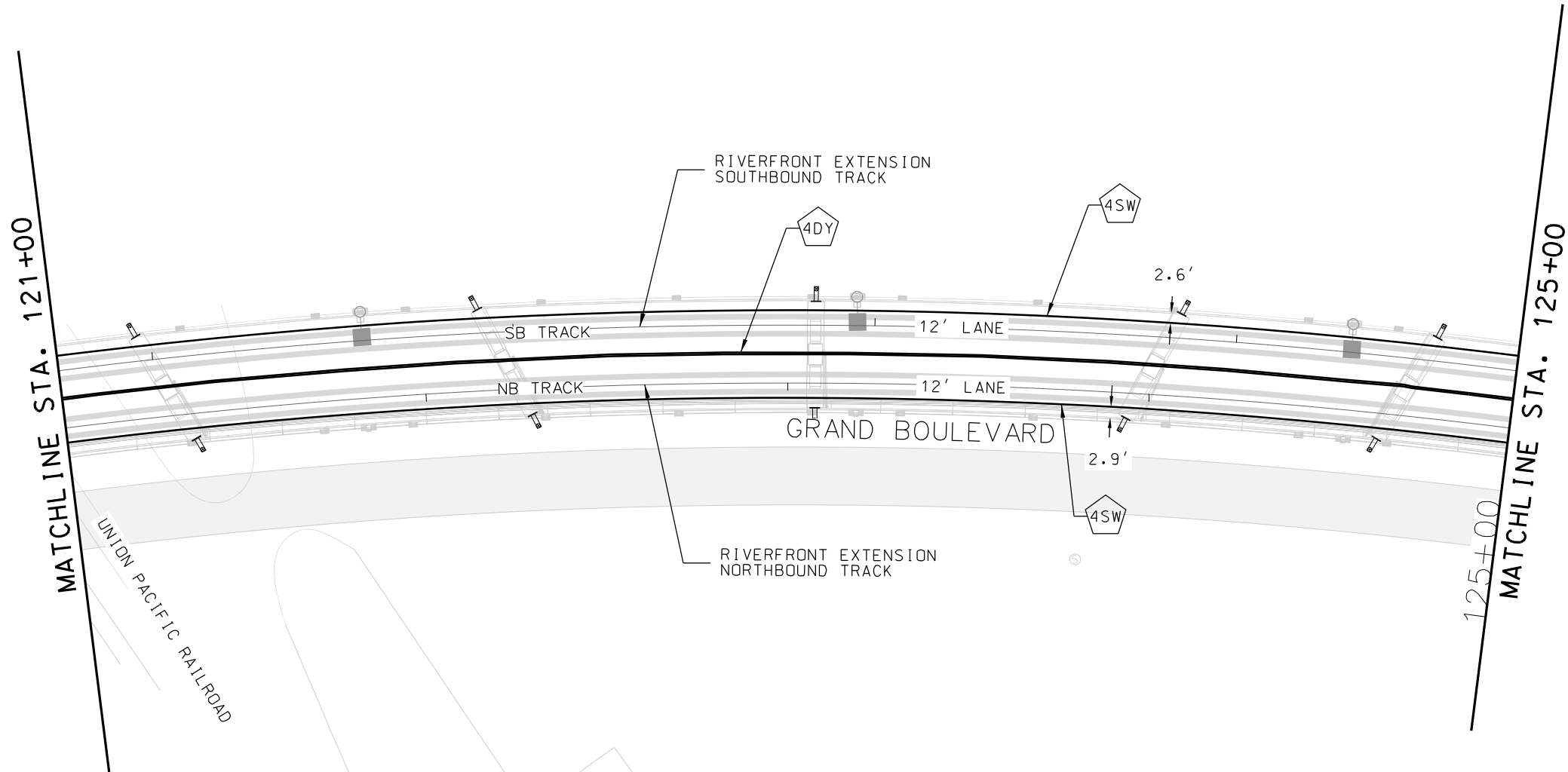
EXAMPLE:

4SW = 4" SOLID LINE WHITE - THERMOPLASTIC

STRIPING KEY
↩ ↲ ↳ PAVEMENT MESSAGES
□ INTERSECTION MARKING
⬡ THERMO/EPOXY STRIPE

GENERAL NOTE

REV			DATE			DESCRIPTION			DESIGNED BY			EJR					ISSUED FOR BID			DATE: 12-23-2022			KANSAS CITY STREETCAR - RIVERFRONT EXTENSION			SCALE FOR 22"x34": 1" = 20'		
									CHECKED BY			NWH					 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			 HG Consult Inc 9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873						FILENAME:		
									DRAWN BY			EJR														Signing and Striping Plan NB Sta		
									CHECKED BY			NWH														CONTRACT NO.:		
									APPROVED BY			NKS														CONTRACT NO. ***		
																		VOLUME:										
																		1										
PLOT DATE: 12/23/2022			1:05:31 PM			DATE			12-23-2022									DRAWING NO.: S103			SHEET NO.: 241							



1ST DIGIT WIDTH	3RD DIGIT COLOR
4"	W - WHITE
6"	Y - YELLOW
8"	G - GREEN

XXX

2ND DIGIT PATTERN
S - SOLID
B - BROKEN
D - DOUBLE SOLID
T - DOTTED

ADDITIONAL NOTES

GR-IN - GROUND IN PAVEMENT MARKING

#/# - LINE CYCLE: STRIPE/SKIP IF OTHER THAN 10/30

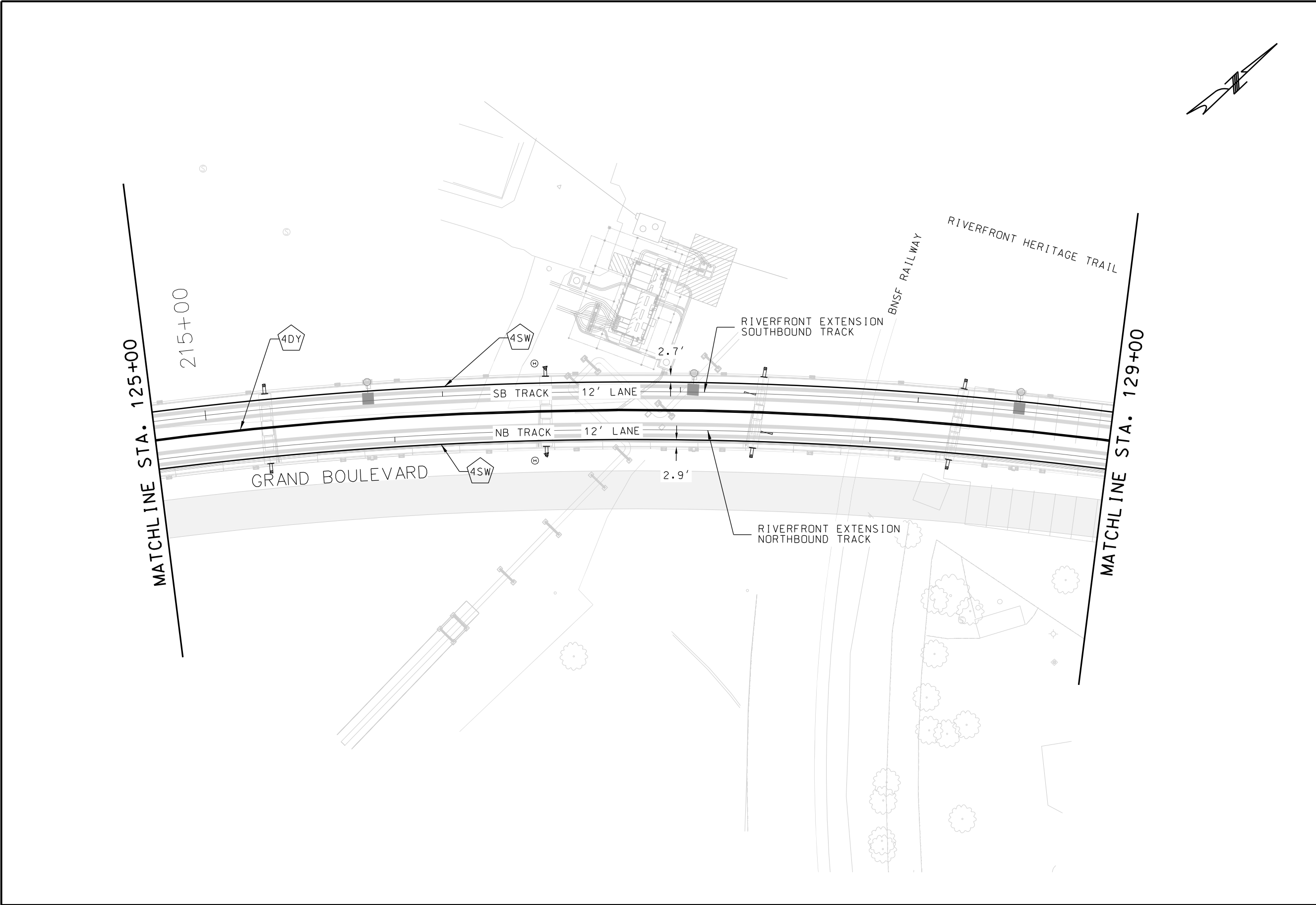
EXAMPLE:

4SW = 4" SOLID LINE WHITE - THERMOPLASTIC

<u>STRIPING KEY</u>	
↩ ↪ ↻	PAVEMENT MESSAGES
□	INTERSECTION MARKING
⬡	THERMO/EPOXY STRIPE

GENERAL NOTE

REV	DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	NWH									
			DRAWN BY	EJR			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			HG Consult Inc 9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873		CONTRACT NO.: CONTRACT NO. ...	
			CHECKED BY	NWH			NOT FOR CONSTRUCTION			SIGNING AND STRIPING PLAN STA 121+00 TO STA 125+00		VOLUME: 1	
			APPROVED BY	NKS								DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022			DATE: 12-23-2022									S104	242



SCALE

0

20

40

60

1ST DIGIT
WIDTH

4"
6"
8"

3RD DIGIT
COLOR

W - WHITE
Y - YELLOW
G - GREEN

2ND DIGIT
PATTERN

S - SOLID
B - BROKEN
D - DOUBLE SOLID
T - DOTTED

ADDITIONAL NOTES

GR-IN - GROUND IN
PAVEMENT MARKING

#/# - LINE CYCLE:
STRIPE/SKIP
IF OTHER THAN 10/30

EXAMPLE:

4SW = 4" SOLID LINE
WHITE -
THERMOPLASTIC

STRIPING KEY

↩ ↗ ↘

 PAVEMENT MESSAGES

□

 INTERSECTION MARKING

⬡

 THERMO/EPOXY STRIPE

GENERAL NOTE

REV			DATE		DESCRIPTION		DESIGNED BY		EJR	
							CHECKED BY		NWH	
							DRAWN BY		EJR	
							CHECKED BY		NWH	
							APPROVED BY		NKS	
PLOT DATE:			12/23/2022		1:05:39 PM		DATE		12-23-2022	

RideKC

STREETCAR

ERIC J. REINKEMEYER

NUMBER

PE-2006002846

PROFESSIONAL ENGINEER

ERIC REINKEMEYER - ENGINEER
LICENSE NO. 2006002846

ISSUED FOR BID

DATE: 12-23-2022

HDR

HDR Engineering, Inc.

HG Consult Inc

9111 NE 79th Street
Kansas City, MO 64158
816-412-4720
Certificate of Authority: 2010005873

10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SIGNING AND STRIPING PLAN
STA 125+00 TO STA 129+00

SCALE FOR 22"x34":
1" = 20'

FILENAME:
Signing and Striping\Plan NB Sta 125+00 - 129+00

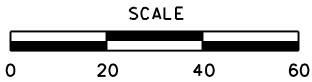
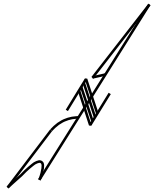
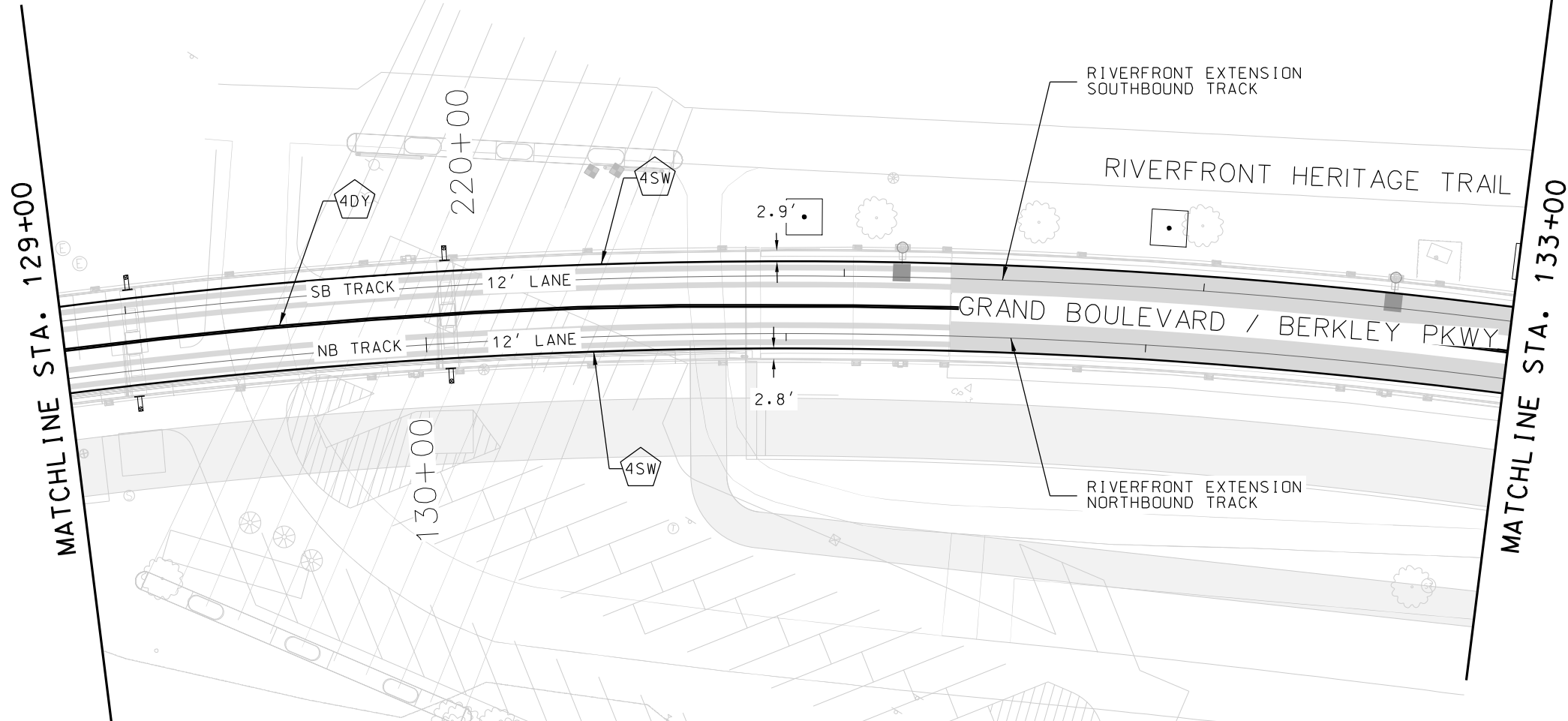
CONTRACT NO.:
CONTRACT NO. ***

VOLUME:
1

DRAWING NO.:
S105

SHEET NO.:
243

303075



1ST DIGIT WIDTH	3RD DIGIT COLOR
4"	W - WHITE
6"	Y - YELLOW
8"	G - GREEN
2ND DIGIT PATTERN	
S - SOLID	
B - BROKEN	
D - DOUBLE SOLID	
T - DOTTED	

ADDITIONAL NOTES

GR-IN - GROUND IN PAVEMENT MARKING

#/# - LINE CYCLE: STRIPE/SKIP IF OTHER THAN 10/30

EXAMPLE:

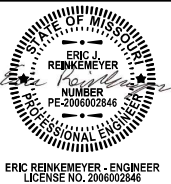
4SW = 4" SOLID LINE
WHITE - THERMOPLASTIC

STRIPING KEY

- ↑ PAVEMENT MESSAGES
- INTERSECTION MARKING
- ◡ THERMO/EPOXY STRIPE

GENERAL NOTE

REV	DATE	DESCRIPTION	DESIGNED BY	EJR
			CHECKED BY	NWH
			DRAWN BY	EJR
			CHECKED BY	NWH
			APPROVED BY	NKS
PLOT DATE: 12/23/2022			DATE	12-23-2022



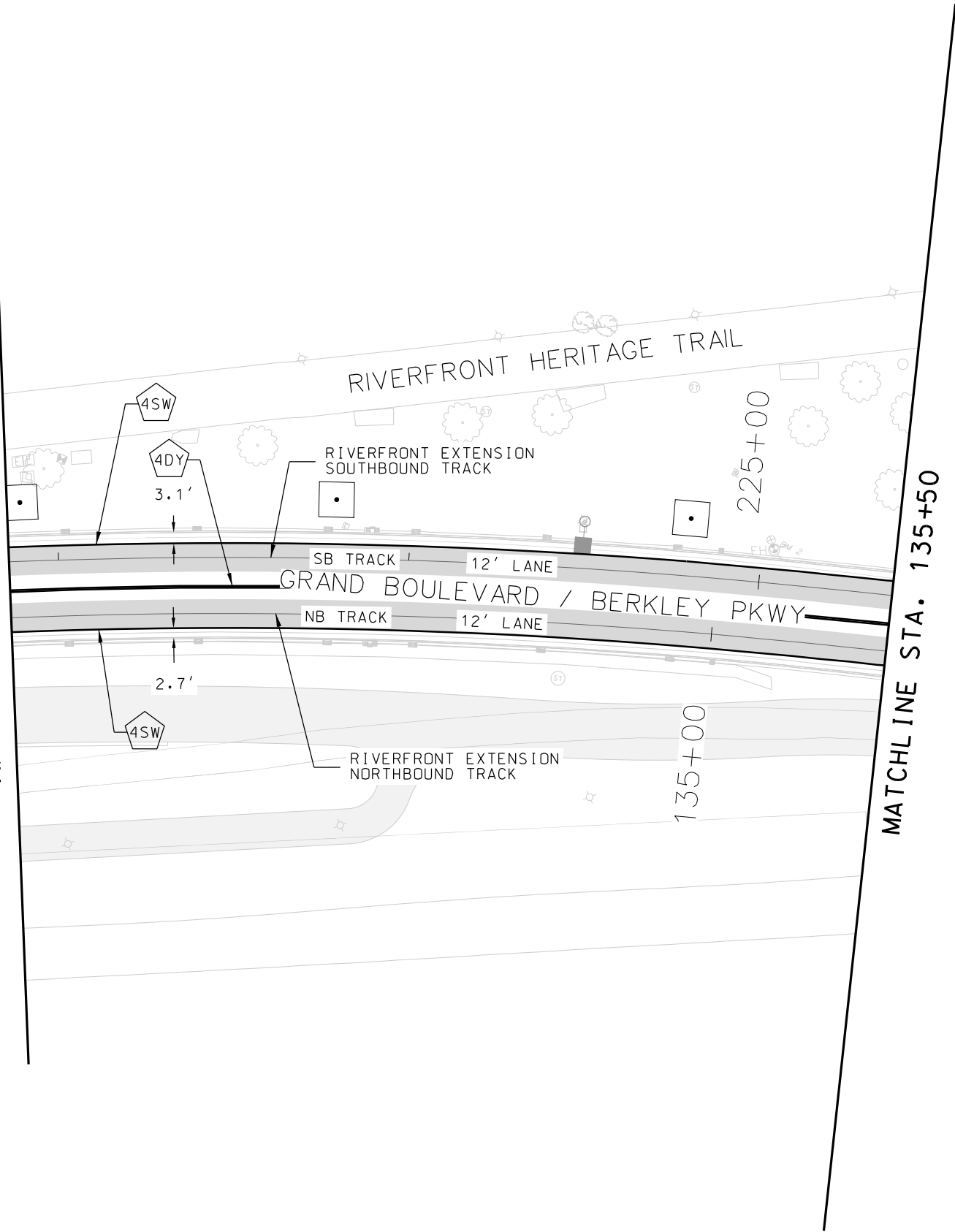
ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	Consult Inc. 9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

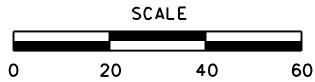
SIGNING AND STRIPING PLAN
STA 129+00 TO STA 133+00

SCALE FOR 22"x34": 1" = 20'	
FILENAME: Signing and Striping Plan NB Sta 129+00 - 133+00	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.:	SHEET NO.:
S106	244

MATCHLINE STA. 133+00



MATCHLINE STA. 135+50



1ST DIGIT WIDTH	3RD DIGIT COLOR
4"	W - WHITE
6"	Y - YELLOW
8"	G - GREEN
2ND DIGIT PATTERN	
S - SOLID	
B - BROKEN	
D - DOUBLE SOLID	
T - DOTTED	

ADDITIONAL NOTES

GR-IN - GROUND IN
PAVEMENT MARKING

#/# - LINE CYCLE:
STRIPE/SKIP
IF OTHER THAN 10/30

EXAMPLE:

4SW = 4" SOLID LINE
WHITE -
THERMOPLASTIC

STRIPING KEY

- PAVEMENT MESSAGES
- INTERSECTION MARKING
- THERMO/EPOXY STRIPE

GENERAL NOTE

REV	DATE	DESCRIPTION
PLOT DATE: 12/23/2022		1:05:46 PM

DESIGNED BY	EJR
CHECKED BY	NWH
DRAWN BY	EJR
CHECKED BY	NWH
APPROVED BY	NKS
DATE	12-23-2022

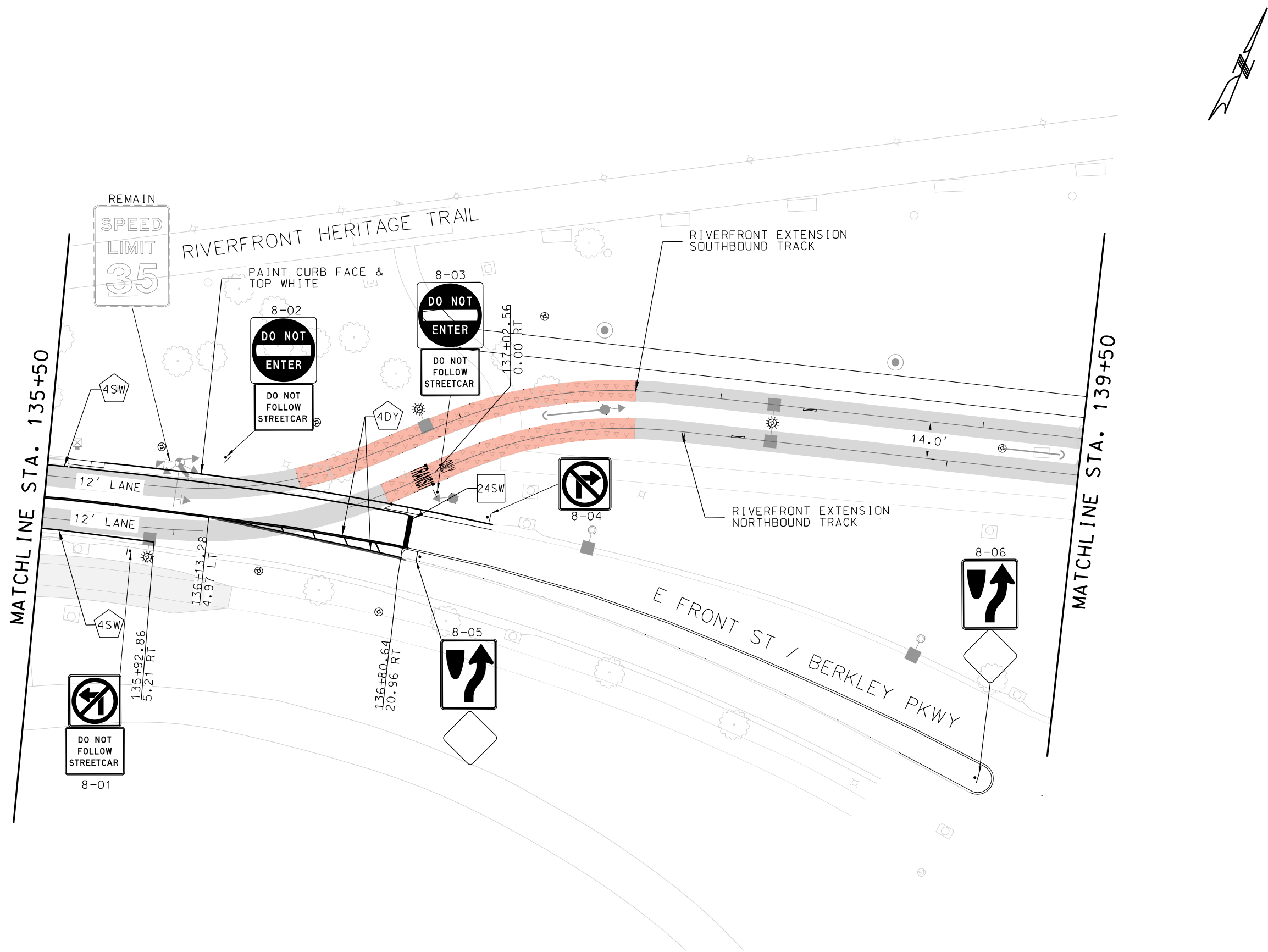


ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HG Consult Inc. 9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SIGNING AND STRIPING PLAN
STA 133+00 TO STA 135+50

SCALE FOR 22"x34": 1" = 20'	
FILENAME: Signing and Striping Plan NB Sta 133+00 - 135+50	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.:	SHEET NO.:
S107	245



SCALE

0

20

40

60

1ST DIGIT
WIDTH

4"
6"
8"

3RD DIGIT
COLOR

W - WHITE
Y - YELLOW
G - GREEN

2ND DIGIT
PATTERN

S - SOLID
B - BROKEN
D - DOUBLE SOLID
T - DOTTED

ADDITIONAL NOTES

GR-IN - GROUND IN
PAVEMENT MARKING

#/# - LINE CYCLE:
STRIPE/SKIP
IF OTHER THAN 10/30

EXAMPLE:

4SW = 4" SOLID LINE
WHITE -
THERMOPLASTIC

STRIPING KEY

↩

↑

↪

PAVEMENT MESSAGES

□

INTERSECTION MARKING

⬡

THERMO/EPOXY STRIPE

GENERAL NOTE

REV	DATE	DESCRIPTION	DESIGNED BY	EJR
			CHECKED BY	NWH
			DRAWN BY	EJR
			CHECKED BY	NWH
			APPROVED BY	NKS
PLOT DATE: 12/23/2022			DATE	12-23-2022

RideKC
STREETCAR

ERIC J. REINKEMEYER
PE-2006022846
PROFESSIONAL ENGINEER

ERIC REINKEMEYER - ENGINEER
LICENSE NO. 2006022846

ISSUED FOR BID

DATE: 12-23-2022

HDR

HDR Engineering, Inc.

10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

Consult
inc

HG Consult Inc
9111 NE 79th Street
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SIGNING AND STRIPING PLAN
STA 135+50 TO STA 139+50

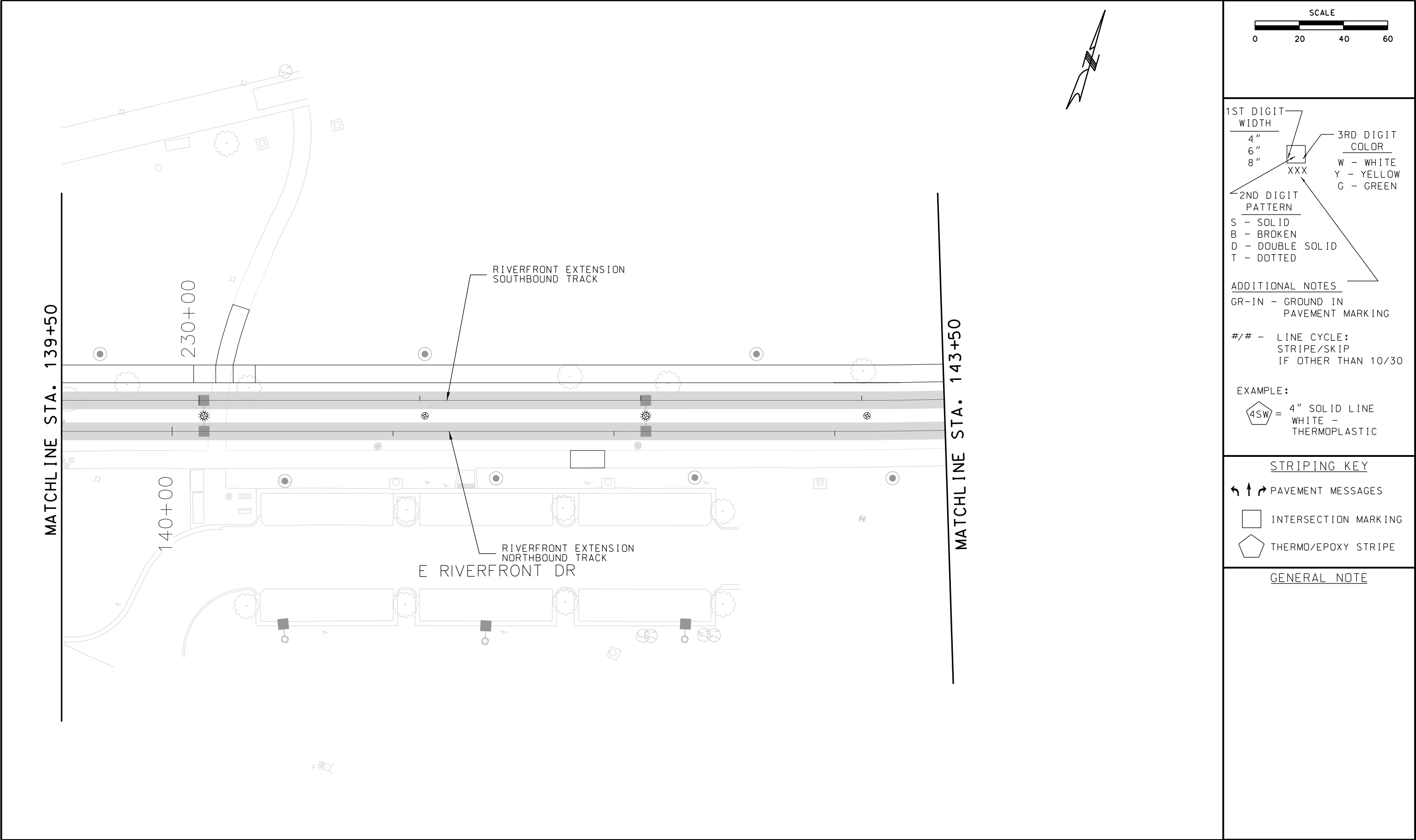
SCALE FOR 22"x34":
1" = 20'

FILENAME:
Signing and Striping Plan NB Sta 135+50 - 139+50

CONTRACT NO.:
CONTRACT NO. ***

VOLUME:
1

DRAWING NO.: SHEET NO.:
S108 246



SCALE

0

20

40

60

1ST DIGIT
WIDTH

4"
6"
8"

3RD DIGIT
COLOR

W - WHITE
Y - YELLOW
G - GREEN

2ND DIGIT
PATTERN

S - SOLID
B - BROKEN
D - DOUBLE SOLID
T - DOTTED

ADDITIONAL NOTES

GR-IN - GROUND IN
PAVEMENT MARKING

#/# - LINE CYCLE:
STRIPE/SKIP
IF OTHER THAN 10/30

EXAMPLE:

4SW = 4" SOLID LINE
WHITE -
THERMOPLASTIC

STRIPING KEY

↩ ↪ ↻

 PAVEMENT MESSAGES

□

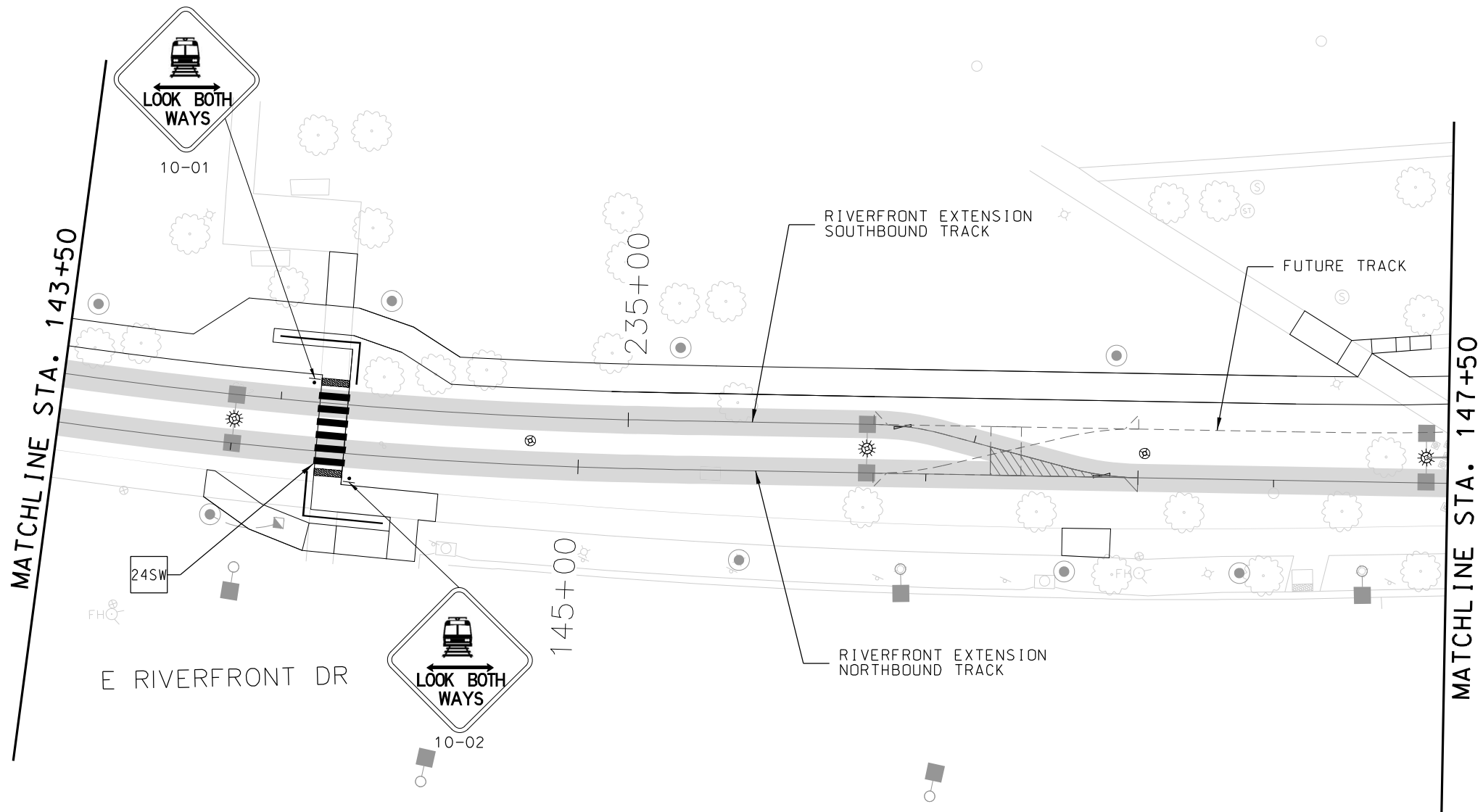
 INTERSECTION MARKING

⬡

 THERMO/EPOXY STRIPE

GENERAL NOTE

REV			DATE	DESCRIPTION	DESIGNED BY	EJR	RideKC STREETCAR	ERIC J. REINKEMEYER PE-2006002846 PROFESSIONAL ENGINEER	ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION SIGNING AND STRIPING PLAN STA 139+50 TO STA 143+50	SCALE FOR 22"x34": 1" = 20'	
					CHECKED BY	NWH			HDR Engineering, Inc.				FILENAME:	
					DRAWN BY	EJR			10450 Holmes Road				Signing and Striping Plan NB Sta 139+50 - 143+50	
					CHECKED BY	NWH			Suite 600				CONTRACT NO.:	
					APPROVED BY	NKS			Kansas City, MO 64131-3471				CONTRACT NO. ***	
PLOT DATE: 12/23/2022			1:05:53 PM	DATE	12-23-2022				816-360-2700				VOLUME:	
									Certificate of Authority: 000856				DRAWING NO.:	
									NOT FOR CONSTRUCTION				SHEET NO.:	
													109	
													247	



1ST DIGIT WIDTH	3RD DIGIT COLOR
4"	W - WHITE
6"	Y - YELLOW
8"	G - GREEN

XXX

2ND DIGIT PATTERN
S - SOLID
B - BROKEN
D - DOUBLE SOLID
T - DOTTED

ADDITIONAL NOTES

GR-IN - GROUND IN
PAVEMENT MARKING

#/# - LINE CYCLE:
STRIPE/SKIP
IF OTHER THAN 10/30

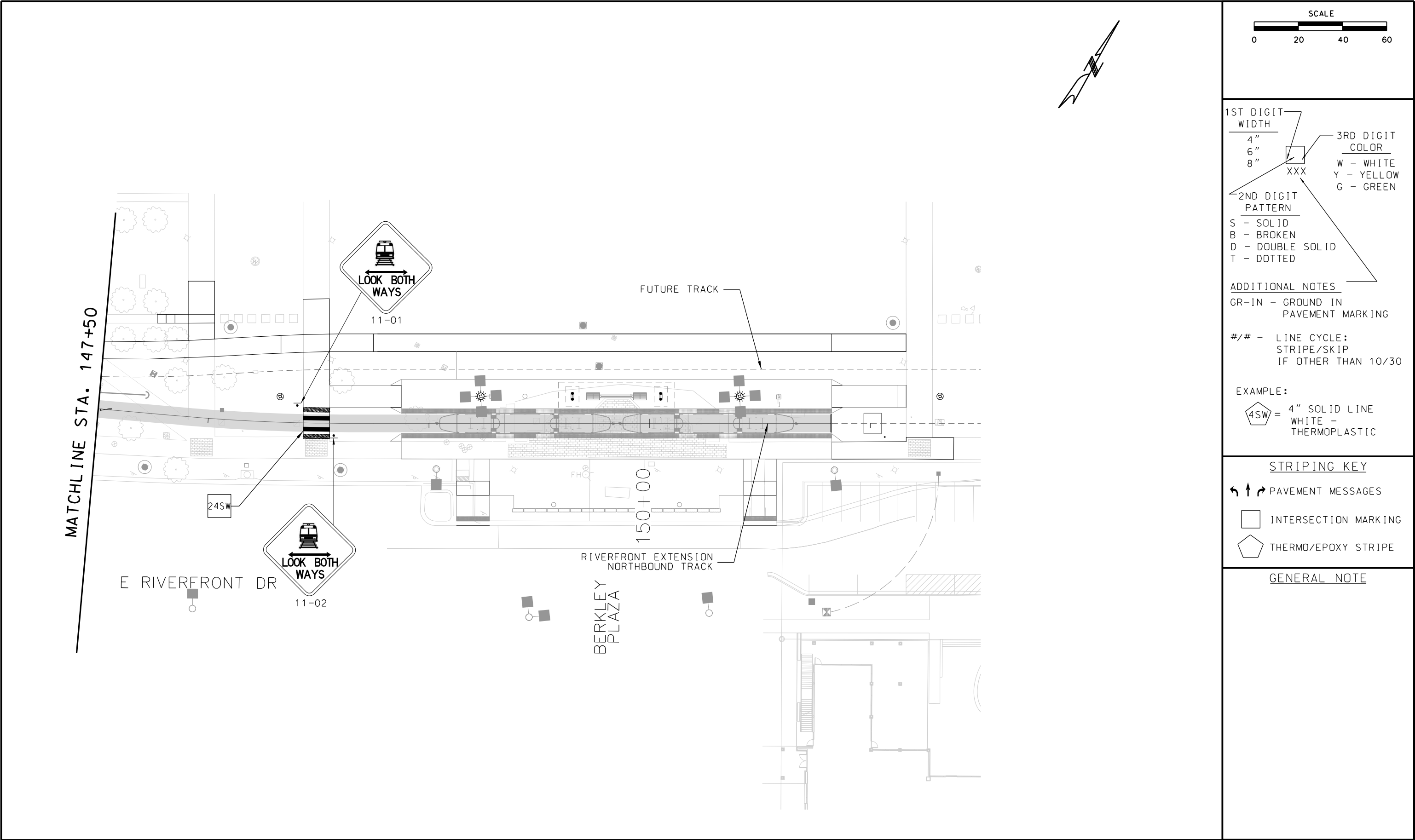
EXAMPLE:

4SW = 4" SOLID LINE
WHITE -
THERMOPLASTIC

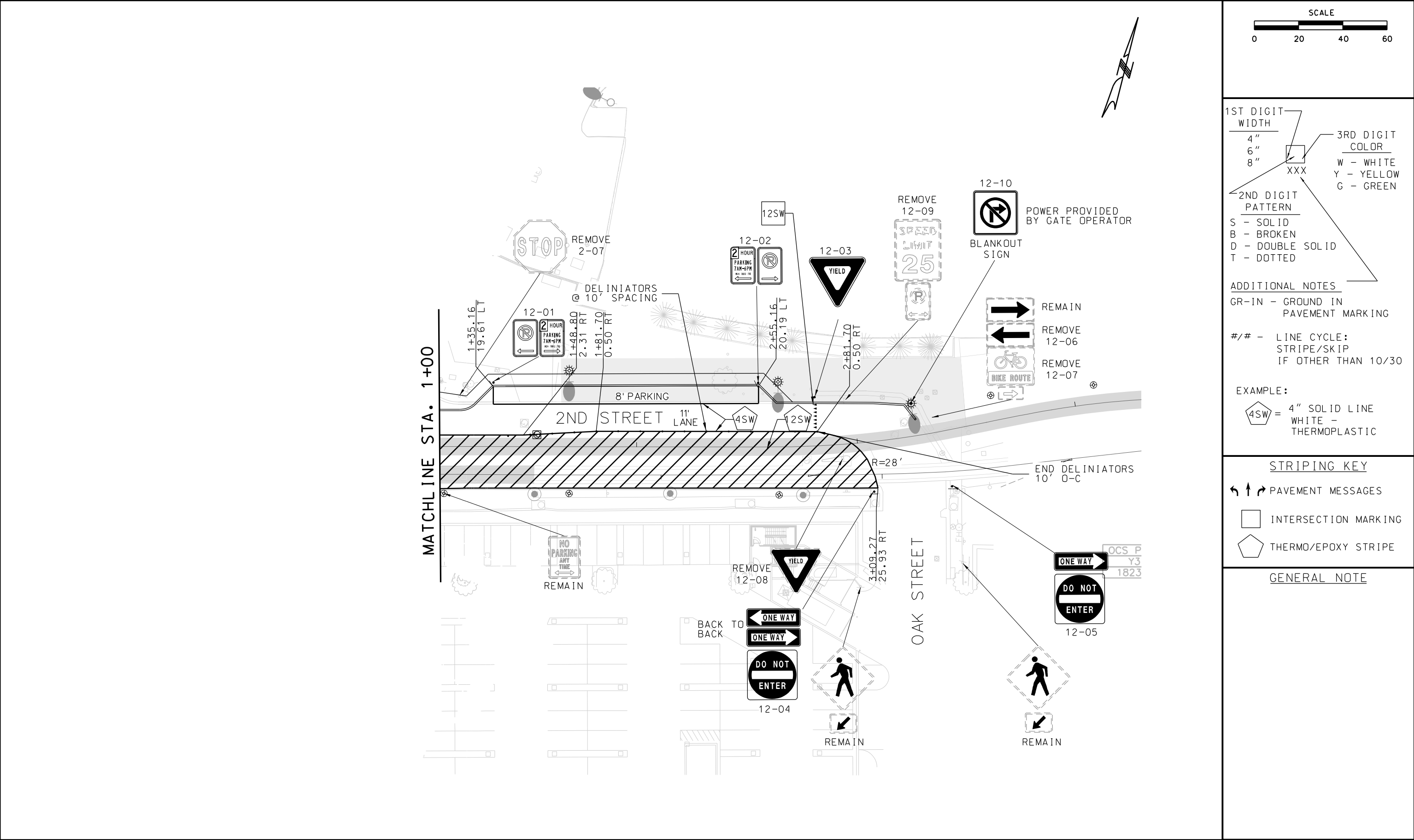
STRIPING KEY	
↩ ↪	PAVEMENT MESSAGES
□	INTERSECTION MARKING
⬡	THERMO/EPOXY STRIPE

GENERAL NOTE

REV	DATE	DESCRIPTION	DESIGNED BY EJR			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY NWH				HDR Engineering, Inc.					HG Consult Inc.	
			DRAWN BY EJR				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873		CONTRACT NO. ***	
			CHECKED BY NWH									CONTRACT NO. ***	
			APPROVED BY NKS									VOLUME: 1	
PLOT DATE: 12/23/2022 1:05:56 PM			DATE: 12-23-2022			NOT FOR CONSTRUCTION				SIGNING AND STRIPING PLAN STA 143+50 TO STA 147+50		DRAWING NO.: S110	SHEET NO.: 248



<table><tr><th>REV</th><th>DATE</th><th>DESCRIPTION</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>			REV	DATE	DESCRIPTION																<table><tr><td>DESIGNED BY</td><td>EJR</td></tr><tr><td>CHECKED BY</td><td>NWH</td></tr><tr><td>DRAWN BY</td><td>EJR</td></tr><tr><td>CHECKED BY</td><td>NWH</td></tr><tr><td>APPROVED BY</td><td>NKS</td></tr></table>		DESIGNED BY	EJR	CHECKED BY	NWH	DRAWN BY	EJR	CHECKED BY	NWH	APPROVED BY	NKS	<table><tr><td></td><td></td></tr><tr><td colspan="2">ERIC REINKEMEYER - ENGINEER LICENSE NO. 2006002846</td></tr></table>			ERIC REINKEMEYER - ENGINEER LICENSE NO. 2006002846		<table><tr><td colspan="2">ISSUED FOR BID</td><td colspan="2">DATE: 12-23-2022</td></tr><tr><td colspan="2"></td><td colspan="2"></td></tr><tr><td colspan="2">HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</td><td colspan="2">HG Consult Inc 9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873</td></tr><tr><td colspan="4">NOT FOR CONSTRUCTION</td></tr></table>	ISSUED FOR BID		DATE: 12-23-2022						HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		HG Consult Inc 9111 NE 79th Street Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873		NOT FOR CONSTRUCTION				<table><tr><td colspan="2">KANSAS CITY STREETCAR - RIVERFRONT EXTENSION</td></tr><tr><td colspan="2">SIGNING AND STRIPING PLAN STA 147+50 TO END</td></tr></table>	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SIGNING AND STRIPING PLAN STA 147+50 TO END		<table><tr><td colspan="2">SCALE FOR 22"x34": 1" = 20'</td></tr><tr><td colspan="2">FILENAME: Signing and Striping Plan NB Sta 147+50 - END</td></tr><tr><td colspan="2">CONTRACT NO.: CONTRACT NO. ***</td></tr><tr><td colspan="2">VOLUME: 1</td></tr><tr><td>DRAWING NO.:</td><td>SHEET NO.:</td></tr><tr><td>S111</td><td>249</td></tr></table>	SCALE FOR 22"x34": 1" = 20'		FILENAME: Signing and Striping Plan NB Sta 147+50 - END		CONTRACT NO.: CONTRACT NO. ***		VOLUME: 1		DRAWING NO.:	SHEET NO.:	S111	249
REV	DATE	DESCRIPTION																																																																						
DESIGNED BY	EJR																																																																							
CHECKED BY	NWH																																																																							
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ERIC REINKEMEYER - ENGINEER LICENSE NO. 2006002846																																																																								
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DRAWING NO.:	SHEET NO.:																																																																							
S111	249																																																																							
PLOT DATE: 12/23/2022 1:05:59 PM			DATE 12-23-2022																																																																					



SCALE

0 20 40 60

1ST DIGIT WIDTH

4"

6"

8"

3RD DIGIT COLOR

W - WHITE

Y - YELLOW

G - GREEN

2ND DIGIT PATTERN

S - SOLID

B - BROKEN

D - DOUBLE SOLID

T - DOTTED

ADDITIONAL NOTES

GR-IN - GROUND IN PAVEMENT MARKING

#/# - LINE CYCLE: STRIPE/SKIP IF OTHER THAN 10/30

EXAMPLE:

4SW = 4" SOLID LINE WHITE - THERMOPLASTIC

STRIPING KEY

PAVEMENT MESSAGES

INTERSECTION MARKING

THERMO/EPOXY STRIPE

GENERAL NOTE

REV			DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'		
					CHECKED BY	NWH							FILENAME:		
					DRAWN BY	EJR							Signing and Striping Plan NB TO VMF		
					CHECKED BY	NWH			10450 Holmes Road				CONTRACT NO.:		
					APPROVED BY	NKS			Suite 600				CONTRACT NO. ***		
PLOT DATE: 12/23/2022			1:06:03 PM	DATE	12-23-2022		Eric Reinkemeyer - Engineer LICENSE NO. 2006002846		9111 NE 79th Street Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				VOLUME: 1		
									NOT FOR CONSTRUCTION				DRAWING NO.: SHEET NO.:		
													S112 250		

PERMANENT PAVEMENT MARKING - LONGITUDINAL LINES (THERMOPLASTIC/EPOXY)								
BEGIN	END	4" WHITE		4" YELLOW		6" WHITE	12" WHITE	12" YELLOW
		SOLID LINE (LF)	DOTTED LINE (LF)	SOLID LINE (LF)	DOTTED LINE (LF)	SOLID LINE (LF)	SOLID LINE (LF)	SOLID LINE (LF)
ALONG GRAND BLVD, BERKLEY PKWY, E FRONT ST								
5TH ST	3RD ST	1412	-	969	-	-	195	-
3RD ST	2ND ST	923	35	631	69	-	35	26
2ND ST	END	4359	-	4605	28	81	-	14
SUBTOTAL		6694	35	6205	97	81	230	40

PERMANENT PAVEMENT MARKING - LONGITUDINAL LINES (THERMOPLASTIC/EPOXY)								
BEGIN	END	4" WHITE		4" YELLOW		6" WHITE	12" WHITE	12" YELLOW
		SOLID LINE (LF)	DOTTED LINE (LF)	SOLID LINE (LF)	DOTTED LINE (LF)	SOLID LINE (LF)	SOLID LINE (LF)	SOLID LINE (LF)
CROSS STREETS								
3RD ST		242	68	201	-	70	-	26
2ND ST		594	-	197	-	80	1013	-
SUBTOTAL		836	68	398	0	150	1013	26
PROJECT TOTAL		7633		6700		231	1243	66

PERMANENT PAVEMENT MARKING - DURABLE INTERSECTION MARKINGS (PREFORMED THERMOPLASTIC/INLAID COLD PLASTIC)													
STATION		TURN ARROW, WHITE		STRAIGHT ARROW, WHITE (EA)	WHITE BIKE SYMBOL (EA)	GREEN BIKE BOX PAINT (SF)	WORD (ONLY) (EA)	WORD (TRANSIT) (EA)	WORD (SLOW) (EA)	24" WHITE		24" GREEN	YIELD MARKERS (EA)
BEGIN	END	LT (EA)	RT (EA)							CONTINENTAL CROSSWALK (LF)	STOP BAR (LF)	CONTINENTAL CROSSWALK (LF)	
ALONG GRAND BLVD, BERKLEY PKWY, E FRONT ST													
5TH ST	3RD ST	1	-	-	1	80	-	-	-	70	38	-	-
3RD ST	2ND ST	1	2	2	3	80	1	-	-	70	43	-	-
2ND ST	END	-	-	1	1	-	1	1	1	150	35	-	-
SUBTOTAL		2	2	3	5	160	2	1	1	290	116	0	0
CROSS STREETS													
3RD		-	-	4	4	-	-	-	-	150	35	90	-
2ND		-	-	-	-	-	-	-	-	160	37	90	7
SUBTOTAL		0	0	4	4	0	0	0	0	310	72	180	7
PROJECT TOTAL		4		7	9	160	2	1	1	788		180	7

REV	DATE	DESCRIPTION

DESIGNED BY
EJR

CHECKED BY
NWH

DRAWN BY
EJR

CHECKED BY
NWH

APPROVED BY
NKS

ISSUED FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

HG Consult Inc
7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

PAVEMENT MARKING TABULATION

SCALE FOR 22"x34":
NOT TO SCALE

FILENAME:
SUMMARY OF STRIPING QTY HG

CONTRACT NO.:
CONTRACT NO. ***

VOLUME:
1

DRAWING NO.:
S113

SHEET NO.:
251

PLOT DATE: 12/23/2022

1:06:06 PM

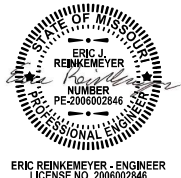
DATE 12-23-2022

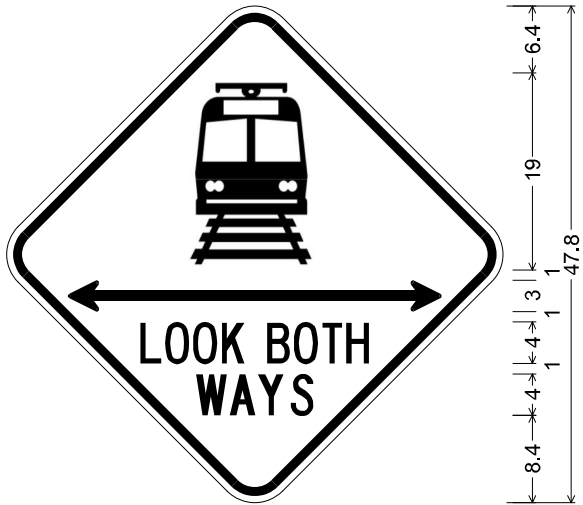
303063

SIGN REMOVALS				PANEL LEGEND	ADDITIONAL NOTES
SIGN NO.	STATION/OFFSET	ALIGNMENT	MUTCD CODE		
1-01	199+81.21 / 35.90 RT	SB SC	R3-17	BIKE LANE	RELOCATE WEST STA 199+56.68 OFF. 36.34 RT
			M7-6	DIRECTIONAL ARROWS	
			Custom Sign	NO PARKING	
			Custom Sign	2 HOUR PARKING	
1-03	201+83.25 / 45.86 RT	SB SC	R1-1	"STOP"	
1-04	200+49.32 / 4.71 LT	SB SC	R3-17	BIKE LANE	RELOCATE TO NEW POLE 200+49.32 OFF. 19.00 LT
2-01	113+92.59 / 30.70 LT	NB SC	Custom Sign	"2ND ST"	
			Custom Sign	"GRAND BLVD"	
2-02	113+34.48 / 25.29 RT	NB SC	Custom Sign	NO PARKING	RELOCATE TO NEW POLE STA. 113+25.32 OFF. 26.38 RT
			Custom Sign	"NO STOPPING STANDING OR PARKING"	
			Custom Sign	"AUTHORIZED TOW-AWAY ZONE"	
2-05	114+27.66 / 37.12 RT	NB SC	R6-1	"ONE WAY" ARROW RIGHT	
2-07	114+82.37 / 46.82 RT	NB SC	R1-1	"STOP"	
12-06	3+33.62 / 6.01 LT	2ND ST	R6-1	ONE WAY LEFT	KEEP POST
12-07	3+33.62 / 6.01 LT	2ND ST	D11-1 / M7-1	BIKE ROUTE / BIKE ROUTE ARROW RIGHT	KEEP POST
12-08	2+93.21 / 12.35 RT	2ND ST	R1-2	YIELD	
12-09	2+94.51 / 13.97 LT	2ND ST	R2-1	SPEED LIMIT	
			Custom Sign	NO PARKING BOTH WAY ARROWS	

SIGNS							SIGN POST (EA)	PANEL LEGEND	ADDITIONAL NOTES
SIGN NO.	STATION/OFFSET	ALIGNMENT	ROADWAY	MUTCD CODE	SIGN SIZE	SIGN PANEL AREA (SF)			
1-02	200+78.47 / 64.55 RT	SB SC	GRAND BLVD	Custom Sign	30" X 30"	6.25	1	BIKE HAZARD WARNING	
1-05	201+16.64 / 17.94 LT	SB SC	GRAND BLVD	R3-2	36" X 36"	9	1	NO LEFT TURN	
1-06	202+30.35 / 36.88 RT	SB SC	GRAND BLVD	R3-7	36" X 36"	9	1	"RIGHT LANE MUST TURN RIGHT"	
2-03	114+04.97 / 23.33 RT	NB SC	GRAND BLVD	R6-1	36" X 12"	3	1	"ONE WAY" ARROW RIGHT	
2-04	114+04.93 / 38.00 RT	NB SC	GRAND BLVD	Custom Sign	30" X 30"	6.25	1	BIKE HAZARD WARNING	MOUNT BOTTOM PANEL AT 8' HIGH
				R9-2	12" X 18"	1.5		"CROSS ONLY AT CROSS WALKS"	
2-06	114+68.94 / 11.24 RT	NB SC	GRAND BLVD	Custom Sign	30" X 30"	6.25	1	BIKE HAZARD WARNING	
2-08	113+96.63 / 33.82 LT	NB SC	GRAND BLVD	R9-2	12" X 18"	1.5	1	"CROSS ONLY AT CROSS WALKS"	INSTALL ON OCS POLE
2-09	116+87.73 / 7.17 RT	NB SC	GRAND BLVD	W3-4	36" X 36"	9	1	"BE PREPARED TO STOP"	
8-01	135+83.13 / 9.32 RT	NB SC	E FRONT STREET / BERKLEY PKWY	R3-2	36" X 36"	9	1	NO LEFT TURN	
				Custom Sign	36" X 29"	7.25			"DO NOT FOLLOW STREETCAR"
8-02	136+21.12 / 27.71 LT	NB SC	E FRONT STREET / BERKLEY PKWY	R5-1	36" X 36"	9	1	DO NOT ENTER	
				Custom Sign	36" X 29"	7.25			"DO NOT FOLLOW STREETCAR"
8-03	137+00.45 / 7.23+ RT	NB SC	E FRONT STREET / BERKLEY PKWY	R5-1	36" X 36"	9	1	DO NOT ENTER	
				Custom Sign	36" X 29"	7.25			"DO NOT FOLLOW STREETCAR"
8-04	137+15.69 / 23.99 RT	NB SC	E FRONT STREET / BERKLEY PKWY	R3-1	36" X 36"	9	1	NO RIGHT TURN	
8-05	136+84.90 / 27.12 RT	NB SC	E FRONT STREET / BERKLEY PKWY	R4-7c	18" X 30"	3.75	1	NARROW KEEP RIGHT SIGN	
				OM1-3	18" X 18"	2.25	1	TYPE 1 OBJECT MARKER	
8+06	139+23.64 / 118.29 RT	NB SC	E FRONT STREET / BERKLEY PKWY	R4-7c	18" X 30"	3.75	1	NARROW KEEP RIGHT SIGN	
				OM1-3	18" X 18"	2.25	1	TYPE 1 OBJECT MARKER	
10-01	144+22.38 / 20.65 LT	NB SC	E RIVERFRONT DR	Custom Sign	36" X 36"	9	1	STREETCAR ADVANCE WARNING SIGN	
10-02	144+34.66 / 8.16 RT	NB SC	E RIVERFRONT DR	Custom Sign	36" X 36"	9	1	STREETCAR ADVANCE WARNING SIGN	
11-01	148+40.17 / 8.92 LT	NB SC	E RIVERFRONT DR	Custom Sign	36" X 36"	9	1	STREETCAR ADVANCE WARNING SIGN	
11-02	148+56.96 / 6.64 RT	NB SC	E RIVERFRONT DR	Custom Sign	36" X 36"	9	1	STREETCAR ADVANCE WARNING SIGN	
12-01	1+35.19 / 21.46 LT	2ND ST	2ND STREET	Custom Sign	12" X 18"	1.5	1	NO PARKING LEFT	
					12" X 18"	1.5		"2 HOUR PARKING" RIGHT	
12-02	2+54.99 / 21.54 LT	2ND ST	2ND STREET	Custom Sign	12" X 18"	1.5	1	NO PARKING LEFT	
					12" X 18"	1.5		"2 HOUR PARKING" RIGHT	
12-03	2+80.49 / 15.07 LT	2ND ST	2ND STREET	R1-2	48" X 48" X 48"	4	1	YIELD	
12-04	3+07.59 / 27.61 RT	2ND ST	2ND STREET	R5-1	36" X 36"	9	1	DO NOT ENTER	
				R6-1	36" X 12"	3		ONE WAY LEFT	
				R6-1	36" X 12"	3		ONE WAY RIGHT	
12-05	3+42.78 / 25.18 RT	2ND ST	2ND STREET	R5-1	36" X 36"	9	1	DO NOT ENTER	
				R6-1	36" X 12"	3		ONE WAY RIGHT	
Totals						194.5	25		

BLANK OUT SIGNS							PANEL LEGEND	ADDITIONAL NOTES
SIGN NO.	STATION/ OFFSET	ALIGNMENT	ROADWAY	MUTCD CODE	SIGN SIZE	SIGN PANEL (EA)		
12-10	3+26.78 / 8.46 LT	2ND ST	2ND STREET	R3-1	36" X 36"	1	"NO RIGHT TURN" BLANKOUT SIGN	MOUNT SIGN TO NEW LIGHT POLE (SEE LIGHTING PLANS)

REV	DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION			SCALE FOR 22"x34": NOT TO SCALE			
			CHECKED BY	NWH					10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873	SIGNING TABULATION		FILENAME:		
			DRAWN BY	EJR								SUMMARY OF SIGNS&slash;REMOVALS&slash;REL				
			CHECKED BY	NWH								CONTRACT NO.:				
			APPROVED BY	NKS								CONTRACT NO. ...				
												VOLUME:				
PLOT DATE: 12/23/2022			1:06:19 PM		DATE	12-23-2022			NOT FOR CONSTRUCTION				DRAWING NO.:	SHEET NO.:		
													S114	252		

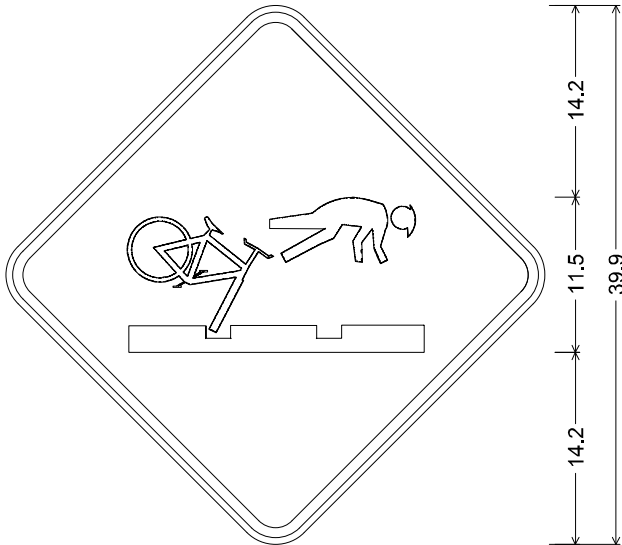


16.5	14.8	16.5
5.9	36	5.9
12.9	10	9.8
18.2	2.2	18.2
	11.4	
47.8		

36.0" across sides 3.8" Radius, 0.9" Border, 0.6" Indent, Black on Yellow;
Light Rail Symbol;
Double Headed Arrow Custom - 36.0" 0°;
"LOOK BOTH", C specified length;
"WAYS", C;

Table of letter and object lefts

							
16.5							
5.9							
L	O	O	K	B	O	T	H
12.9	15.3	18.0	20.7	25.1	27.7	30.3	32.7
W	A	Y	S				
18.2	21.5	24.2	27.4				



9	22	8.9
39.9		

30.0" across sides 3.0" Radius, 0.8" Border, 0.5" Indent, Black on Yellow;
Table of letter and object lefts.


9.0



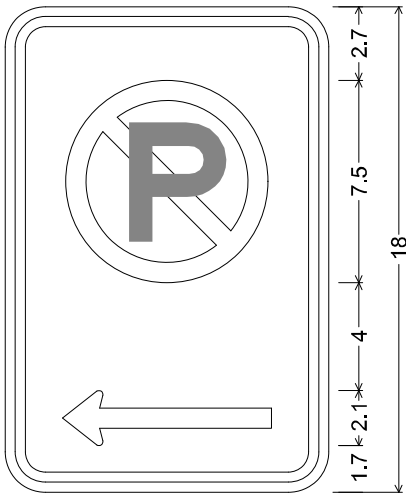
8.1	6.2	4	9.6	8.1
7.8	20.4			7.8
7.1	21.8			7.1
29.6				
3.2	36			3.2

1.5" Radius, 0.6" Border, 0.4" Indent, Black on, White;

"DO NOT", 2K; "FOLLOW", 2K;

"STREETCAR", 2K;

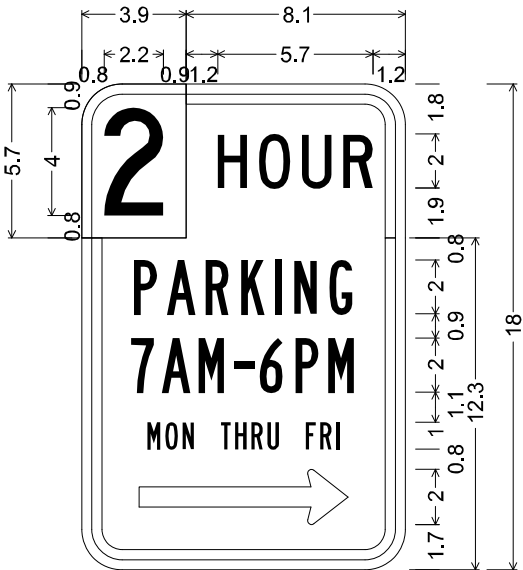
D	O	N	O	T
8.1	11.5	18.3	21.9	27.9
F	O	L	L	O
7.8	11.2	14.6	18.0	21.4
S	T	R	E	E
3.2	6.5	9.8	13.1	16.4
C	A	R		
23.0	26.3	29.6		



1.5" Radius, 0.4" Border, 0.4" Indent, Red on White;
NO PARKING SYMBOL;
Standard Arrow Custom 7.8" X 6.1" 180°;
Table of letter and object lefts.


2.3


2.1

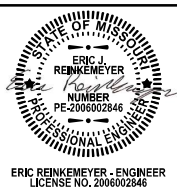
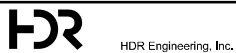


1.9	8.1	2
1.8	8.3	1.9
2.4	1.8	1
2.1	7.8	2.1
12		

1.5" Radius, 0.4" Border, White on Green;
[2] C;
1.5" Radius, 0.4" Border, 0.4" Indent, Green on White;
[HOUR] C 104% spacing;
1.5" Radius, 0.4" Border, 0.4" Indent, Green on White;
[PARKING] B 125% spacing;
[7AM-6PM] B 98% spacing;
[MON THRU FRI] B 98% spacing;
Standard Arrow Custom 7.8" X 6.1" 0°;
Table of letter and object lefts.

2						
0.8						
H	O	U	R			
5.0	6.6	8.2	9.7			
P	A	R	K	I	N	G
1.9	3.2	4.6	5.9	7.2	7.9	9.2
7	A	M	-	6	P	M
1.8	3.0	4.3	5.7	6.6	7.9	9.1
M	O	N	T	H	R	U
2.4	3.1	3.7	5.2	5.7	6.3	6.9
F	R	I				
8.3	8.8	9.4				


2.1

REV	DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE		
			CHECKED BY	NWH							SIGN PANEL DETAILS		FILENAME:	
			DRAWN BY	EJR			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873				Sign Panel Details	
			CHECKED BY	NWH			NOT FOR CONSTRUCTION						CONTRACT NO. ...	
			APPROVED BY	NKS									CONTRACT NO. ...	
PLOT DATE: 12/23/2022			1:06:24 PM		DATE		12-23-2022				DRAWING NO.: SHEET NO.:			
											S115 253			

[illegible]

STATIONING TABLE		
ITEM	STATION	OFFSET
SBC5500	N 111+05	R 56.49
RE1	N 111+38	R 22.83
SBCXXX	N 111+79	R 21.41
RE2	N 112+21	R 21.27
RE3	N 112+79	R 25.96



GENERAL NOTES

1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.

KEYED NOTES

- 1 EXISTING COBRA HEAD LED STREETLIGHT ON EXISTING TRAFFIC SIGNAL POLE TO REMAIN.
- 2 EXISTING COBRA HEAD LED STREETLIGHT ON EXISTING EVERY WOOD POLE TO REMAIN.
- 3 LOCATION OF OCS POLE.
- 4 EXISTING COBRA HEAD LED STREETLIGHT ON EXISTING OCS POLE TO REMAIN.
- 5 EXISTING SHOEBOX LIGHT POLE TO BE RELOCATED. PROVIDE NEW POLE BASE FOR SHOEBOX LIGHT POLE AT NEW LOCATION. EXTEND EXISTING CONDUIT AND WIRE TO NEW LOCATION.
- 6 EXISTING PEDESTRIAN LIGHT TO REMAIN.
- 7 EXISTING PEDESTRIAN LIGHT POLE TO BE RELOCATED TO NEW LOCATION IN NEW GREEN SPACE. PROVIDE NEW POLE BASE FOR PEDESTRIAN LIGHT POLE AT NEW LOCATION. PROVIDE NEW CONDUIT AND WIRES TO NEW LOCATION. REMOVE EXISTING CONDUCTORS AND ABANDONED EXISTING CONDUIT FOR RELOCATED EXISTING PEDESTRIAN LIGHT POLES. RECONNECT TO EXISTING CIRCUIT FOR PEDESTRIAN LIGHT POLE.
- 8 RELOCATE EXISTING LED COBRA HEAD STREETLIGHT FIXTURE ON OCS POLE. TO NEW LOCATION SHOWN ON PLAN. REFER TO OCS SHEETS FOR STATIONING OF RELOCATED OCS POLE.
- 9 EXISTING COBRA HEAD LED STREETLIGHT ON EXISTING EVERY WOOD POLE TO REMAIN. EVERY WOOD POLE HAS EXISTING CONDUIT AND FIXTURES WIRES THAT PROVIDE POWER FOR STREETLIGHT ON TRAFFIC SIGNAL POLES AT INTERSECTION OF 3RD AND GRAND BLVD.
- 10 EXISTING COBRA HEAD LED STREETLIGHT ON EXISTING TRAFFIC SIGNAL POLE TO BE REMOVED. DELIVER EXISTING COBRA HEAD LED LIGHT FIXTURE TO MAINTENANCE CONTRACTOR OF KANSAS CITY, MISSOURI.
- 11 NEW LED LUMINAIRE ON TRAFFIC SIGNAL/OCS POLE. REFER TO TRAFFIC SIGNAL SHEETS FOR LOCATION OF NEW LED LUMINAIRE ON TRAFFIC SIGNAL OCS POLE AND CONDUIT SIZE FOR LUMINAIRE. PROVIDE 1-3#8 FROM EXISTING EVERY POWER POLE TO EACH LED LUMINAIRE ON TRAFFIC SIGNAL POLE. LUMINAIRE SHOWN FOR REFERENCE ONLY.
- 12 REMOVE EXISTING PULL BOX FOR TRAFFIC SIGNAL POLES CONTRACTOR TO PULL BACK CONDUCTOR AND INTERCEPT CONDUIT WITH NEW PULL BOX AND PROVIDE NEW WIRES.
- 13 2 #6, 1 #6 GND IN 2" CONDUIT.
- 14 2 #8, 1 #8 GND FOR STREETLIGHTS ON TRAFFIC SIGNAL POLES IN 2" CONDUIT PROVIDED BY TRAFFIC SIGNAL.

- 15 EXISTING PEDESTRIAN LIGHT TO BE REMOVED.
- 16 PROVIDE 2#8, 1#8 GND. IN 2" CONDUIT FROM TRAFFIC SIGNAL PULL BOX TO NEW LED LUMINAIRE TYPE 'D' ON 35' POLE. PROVIDE BASE PER DETAIL ON SHEET L302. REFER TO SPECIFICATION OF LUMINAIRE TYPE 'D' ON SHEET L302. COORDINATE STREET LIGHTING NUMBER WITH KCMO STREET LIGHTING DEPARTMENT. REFER TO TRAFFIC SIGNAL SHEETS FOR LOCATION OF TRAFFIC SIGNAL PULL BOX.
- 17 EXISTING CONDUIT AND WIRES TO EXISTING TRAFFIC SIGNAL POLES TO BE PULLED BACK AND RECRUITED FOR LIGHTING CIRCUIT FOR STREET LIGHTS ON TRAFFIC SIGNAL POLES.

MATCHLINE STA. 113+00

REV	DATE	DESCRIPTION	DESIGNED BY	AAS
			CHECKED BY	CKB
			DRAWN BY	RAL
			CHECKED BY	CKB
			APPROVED BY	AAS
PLOT DATE: 12/22/2022			DATE	12-23-2022



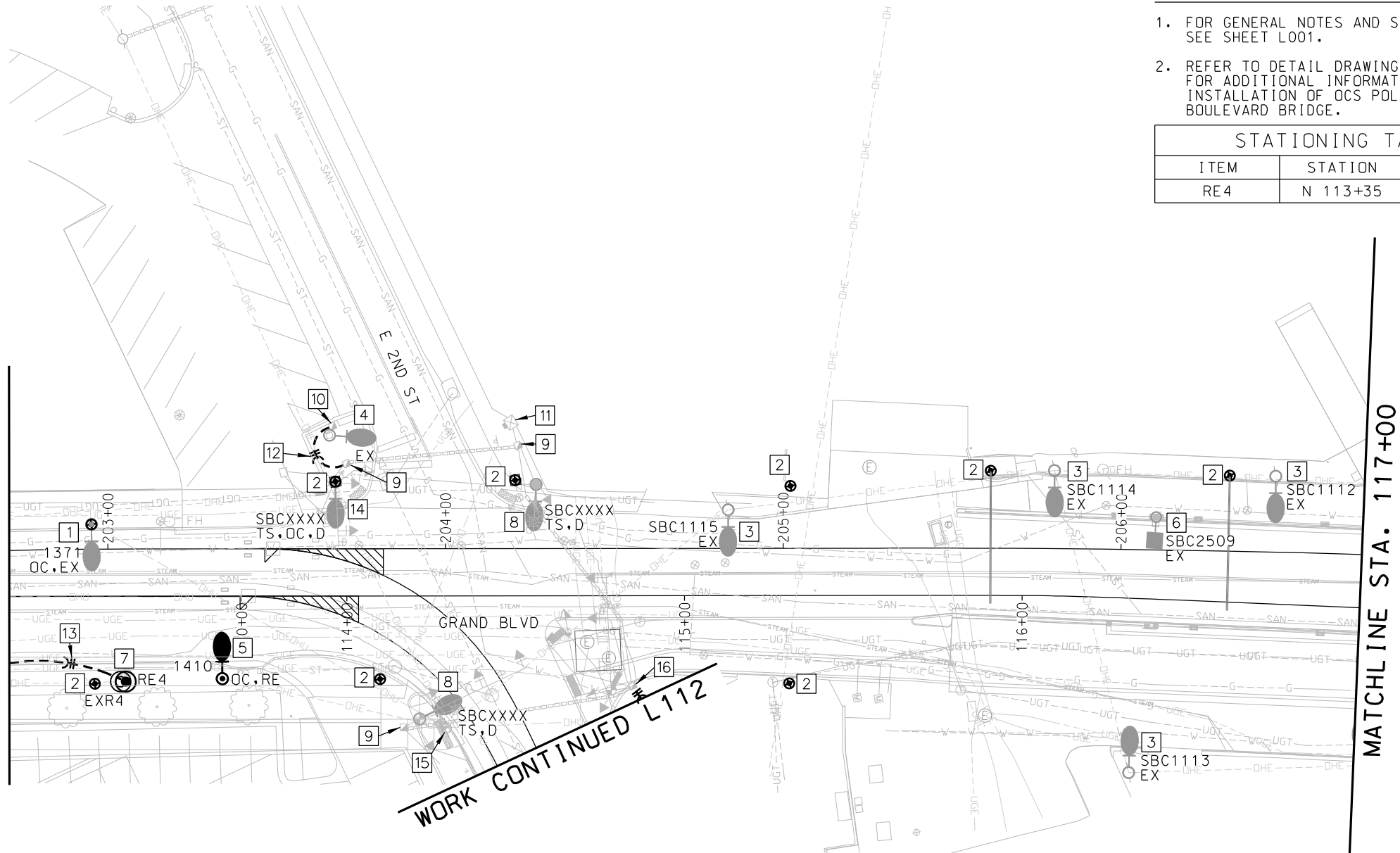
ISSUED FOR BID		DATE: 12-23-2022
10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239
NOT FOR CONSTRUCTION		

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

NORTHBOUND TRACK
LIGHTING PLAN
STA BEGIN TO STA 113+00

SCALE FOR 22"x34": 1" = 20'	
FILENAME: L101.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.: L101	SHEET NO.: 255

MATCHLINE STA. 113+00



WORK CONTINUED L112

GENERAL NOTES

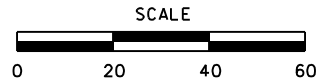
- FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.
- REFER TO DETAIL DRAWINGS Y037 & Y038 FOR ADDITIONAL INFORMATION REGARDING INSTALLATION OF OCS POLES ON GRAND BOULEVARD BRIDGE.

STATIONING TABLE

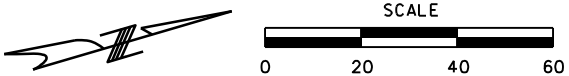
ITEM	STATION	OFFSET
RE4	N 113+35	R 25.31

KEYED NOTES

- EXISTING COBRA HEAD 400 WATT HPS STREETLIGHT ON EXISTING OCS POLE TO REMAIN.
- LOCATION OF OCS POLE.
- EXISTING COBRA HEAD 150 WATT HPS STREETLIGHT ON EXISTING EVERGY WOOD POLE TO REMAIN.
- EXISTING COBRA HEAD 150 WATT HPS STREET LIGHT ON METAL POLE TO REMAIN.
- EXISTING COBRA HEAD STREETLIGHT ON EXISTING OCS POLE TO BE RELOCATED IN NEW GREEN SPACE. REFER TO OCS SHEETS FOR STATIONING OF RELOCATED OCS POLE.
- EXISTING SHOE BOX STREETLIGHT POLE ON THE BRIDGE TO REMAIN. EXISTING SHOE BOX FIXTURE WILL BE REPLACED WITH AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE BY CITY OF KCMO. COORDINATE REPLACEMENT WITH KCMO STREET LIGHTING DEPARTMENT.
- EXISTING PEDESTRIAN LIGHT POLE TO BE RELOCATED TO NEW LOCATION IN NEW GREEN SPACE. PROVIDE NEW POLE BASE FOR PEDESTRIAN LIGHT POLE AT NEW LOCATION. PROVIDE NEW CONDUIT AND WIRES TO NEW LOCATION. REMOVE EXISTING CONDUCTORS AND ABANDONED EXISTING CONDUIT FOR RELOCATED EXISTING PEDESTRIAN LIGHT POLES. RECONNECT TO EXISTING CIRCUIT FOR PEDESTRIAN LIGHT POLE.
- NEW LED LUMINAIRE ON TRAFFIC SIGNAL POLE. REFER TO TRAFFIC SIGNAL SHEET FOR LOCATION OF NEW LED LUMINAIRE ON TRAFFIC SIGNAL AND CONDUIT SIZE FOR LUMINAIRE. PROVIDE 1-3#8 FROM EXISTING STREET LIGHTING CIRCUIT TO EACH LED LUMINAIRES ON TRAFFIC SIGNAL POLE. LUMINAIRE SHOWN FOR REFERENCE ONLY. COORDINATE STREET LIGHTING NUMBER WITH KCMO STREET LIGHTING DEPARTMENT.
- PULL BOX FOR TRAFFIC SIGNAL. COORDINATE LOCATION WITH TRAFFIC SIGNAL SHEET. PULL BOX IS SHOWN FOR REFERENCE ONLY.
- EXISTING PULL BOX FOR EXISTING STREET LIGHT TO REMAIN.
- CABINET FOR TRAFFIC SIGNAL. REFER TO TRAFFIC SIGNAL SHEETS FOR CABINET LOCATION. CABINET FOR TRAFFIC SIGNAL IS SHOWN FOR REFERENCE ONLY.
- 1-3#8 IN 2" CONDUIT FOR LIGHTING CIRCUIT FROM PULL BOX FOR TRAFFIC SIGNAL TO EXISTING PULL FOR STREETLIGHT INTERCEPT EXISTING STREETLIGHT CIRCUIT AND TIE TO EXISTING CIRCUIT.
- 2 #6, 1 #6 GND IN 2" CONDUIT.



REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	NORTHBOUND TRACK LIGHTING PLAN STA 113+00 TO STA 117+00	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	CKB									FILENAME:	L102.dgn
			DRAWN BY	RAL									CONTRACT NO.:	
			CHECKED BY	CKB									CONTRACT NO. ***	
			APPROVED BY	AAS									VOLUME:	1
PLOT DATE: 12/22/2022			2:25:14 PM		DATE		12-23-2022		NOT FOR CONSTRUCTION				DRAWING NO.:	SHEET NO.:

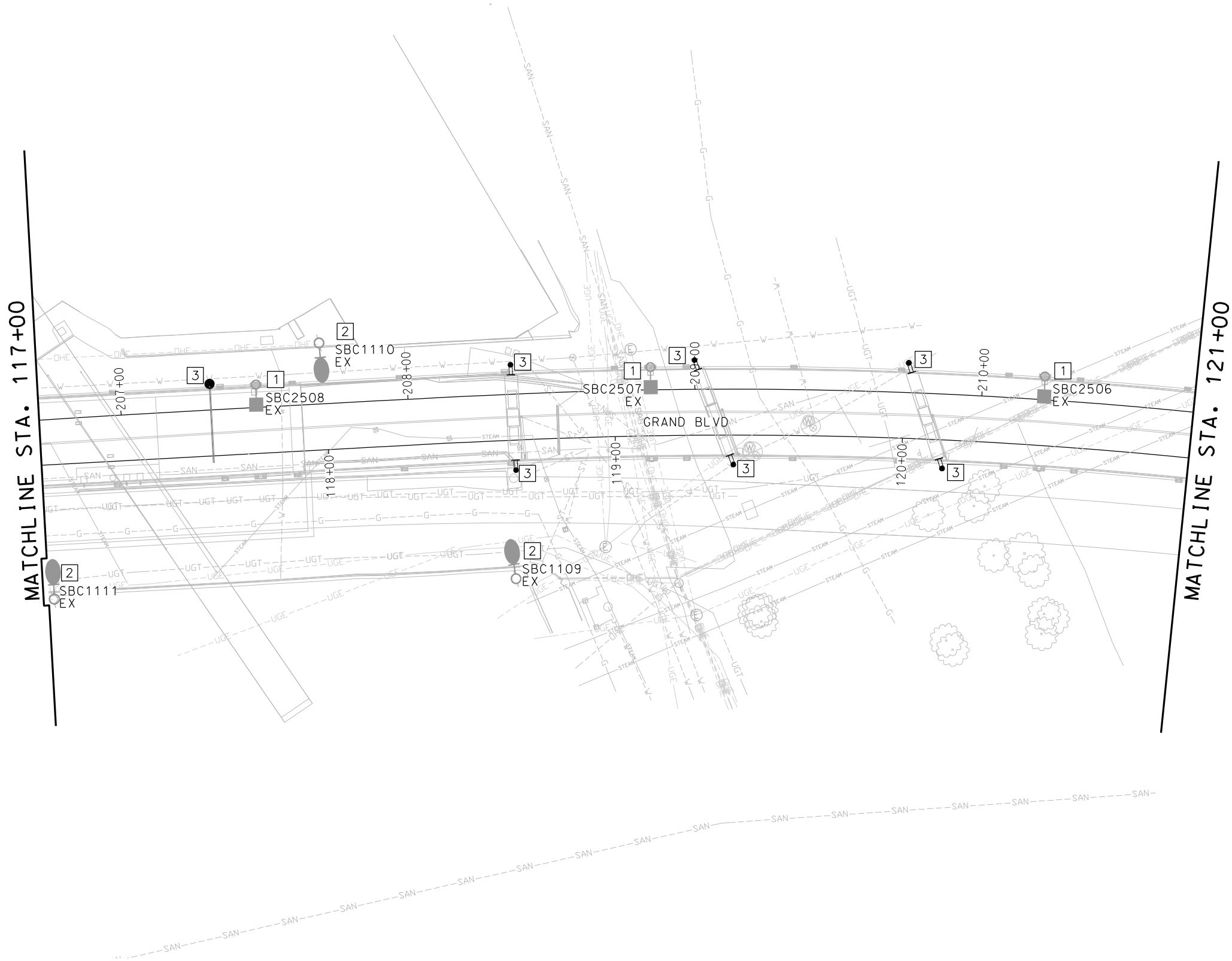


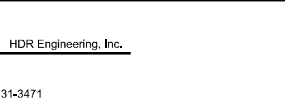
GENERAL NOTES

- 1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.
- 2. REFER TO DETAIL DRAWINGS Y037 & Y038 FOR ADDITIONAL INFORMATION REGARDING INSTALLATION OF OCS POLES ON GRAND BOULEVARD BRIDGE.

KEYED NOTES

- 1 EXISTING SHOE BOX STREETLIGHT POLE ON THE BRIDGE TO REMAIN. EXISTING SHOE BOX FIXTURE WILL BE REPLACED WITH AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE BY CITY OF KCMO. COORDINATE REPLACEMENT WITH KCMO STREET LIGHTING DEPARTMENT.
- 2 EXISTING 150-WATT HPS STREETLIGHT ON WOOD POLE TO REMAIN.
- 3 LOCATION OF OCS POLE.



REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID		DATE: 12-23-2022			KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	CKB			HDR Engineering, Inc.		Custom Engineering			NORTHBOUND TRACK LIGHTING PLAN STA 117+00 TO STA 121+00				FILENAME: L103.dgn	
			DRAWN BY	RAL			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239							CONTRACT NO.: CONTRACT NO. ...	
			CHECKED BY	CKB												VOLUME: 1	
			APPROVED BY	AAS										DRAWING NO.: L103		SHEET NO.: 257	
PLOT DATE: 12/22/2022			2:03:11 PM		DATE 12-23-2022		NOT FOR CONSTRUCTION										

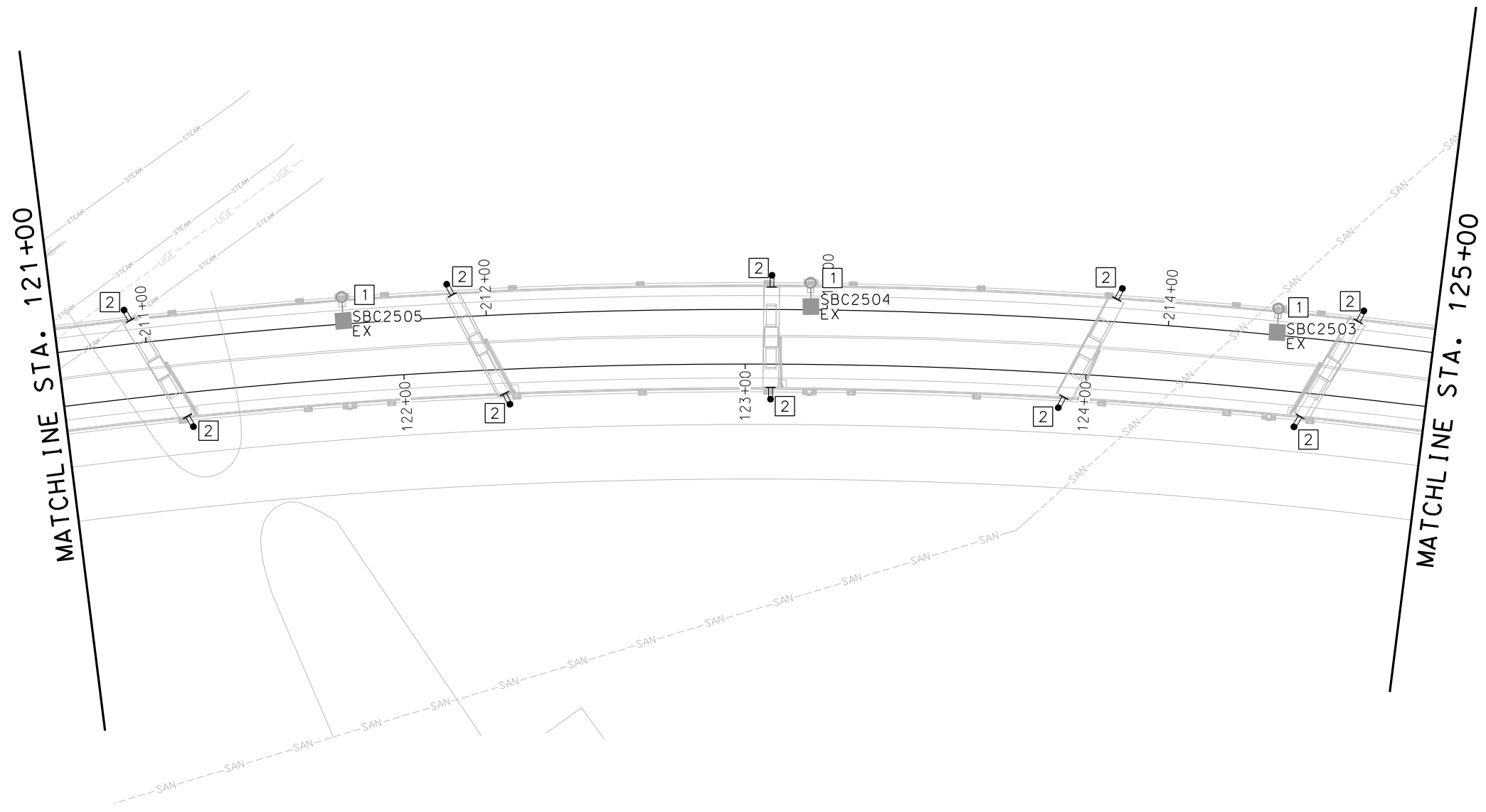


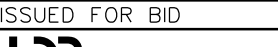
GENERAL NOTES

- 1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.
- 2. REFER TO DETAIL DRAWINGS Y037 & Y038 FOR ADDITIONAL INFORMATION REGARDING INSTALLATION OF OCS POLES ON GRAND BOULEVARD BRIDGE.

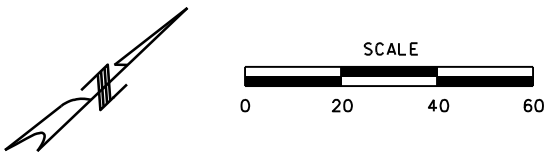
KEYED NOTES

- 1 EXISTING SHOE BOX STREETLIGHT POLE ON THE BRIDGE TO REMAIN. EXISTING SHOE BOX FIXTURE WILL BE REPLACED WITH AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE BY CITY OF KCMO. COORDINATE REPLACEMENT WITH KCMO STREET LIGHTING DEPARTMENT.
- 2 LOCATION OF OCS POLE.



REV			DATE			DESCRIPTION			DESIGNED BY		AAS				ISSUED FOR BID				DATE: 12-23-2022				KANSAS CITY STREETCAR - RIVERFRONT EXTENSION										SCALE FOR 22"x34":			
									CHECKED BY		CKB																						1" = 20'			
									DRAWN BY		RAL				10450 Holmes Road				FILENAME:																	
									CHECKED BY		CKB				Suite 600				L104.dgn																	
									APPROVED BY		AAS				Kansas City, MO 64131-3471				CONTRACT NO.:																	
PLOT DATE: 12/22/2022			2:03:37 PM			DATE			12-23-2022			Certificate of Authority: 000856				Certificate of Authority: 000239				CONTRACT NO. ...																
															NOT FOR CONSTRUCTION												DRAWING NO.:				SHEET NO.:					
																											L104				258					

NORTHBOUND TRACK
LIGHTING PLAN
STA 121+00 TO STA 125+00

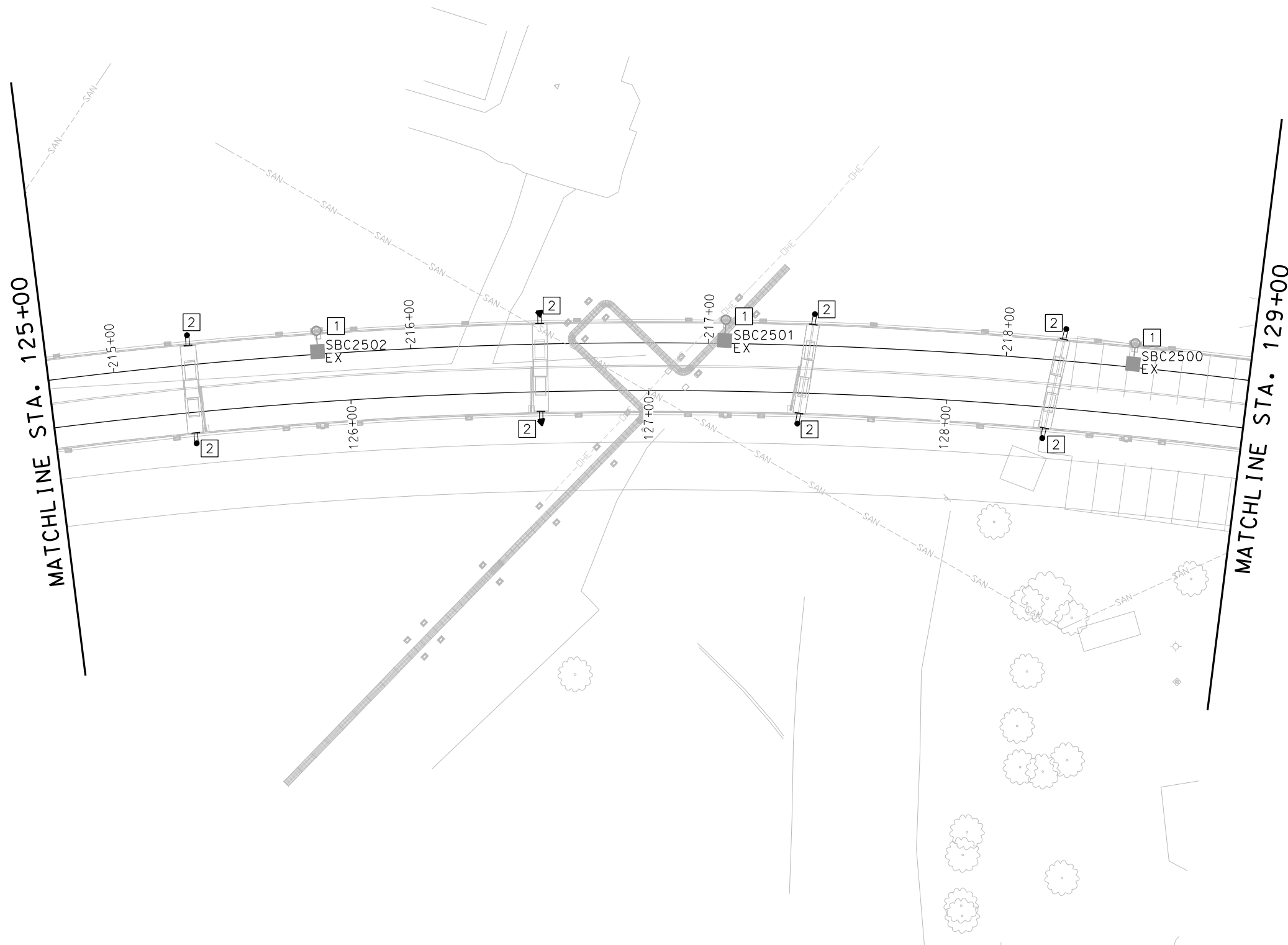


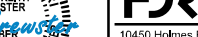
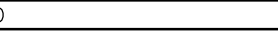
GENERAL NOTES

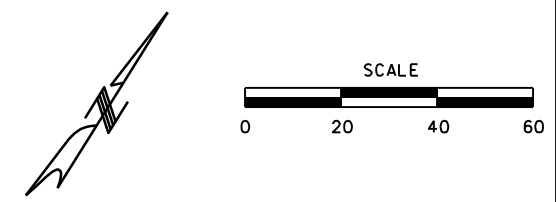
- 1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.
- 2. REFER TO DETAIL DRAWINGS Y037 & Y038 FOR ADDITIONAL INFORMATION REGARDING INSTALLATION OF OCS POLES ON GRAND BOULEVARD BRIDGE.

KEYED NOTES

- 1 EXISTING SHOE BOX STREETLIGHT POLE ON THE BRIDGE TO REMAIN. EXISTING SHOE BOX FIXTURE WILL BE REPLACED WITH AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE BY CITY OF KCMO. COORDINATE REPLACEMENT WITH KCMO STREET LIGHTING DEPARTMENT.
- 2 LOCATION OF OCS POLE.



REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	CKB			FILENAME: L105.dgn						
			DRAWN BY	RAL			CONTRACT NO.:						
			CHECKED BY	CKB			CONTRACT NO. ***						
			APPROVED BY	AAS			VOLUME: 1						
PLOT DATE: 12/22/2022			2:04:01 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION				DRAWING NO.: L105		SHEET NO.: 259

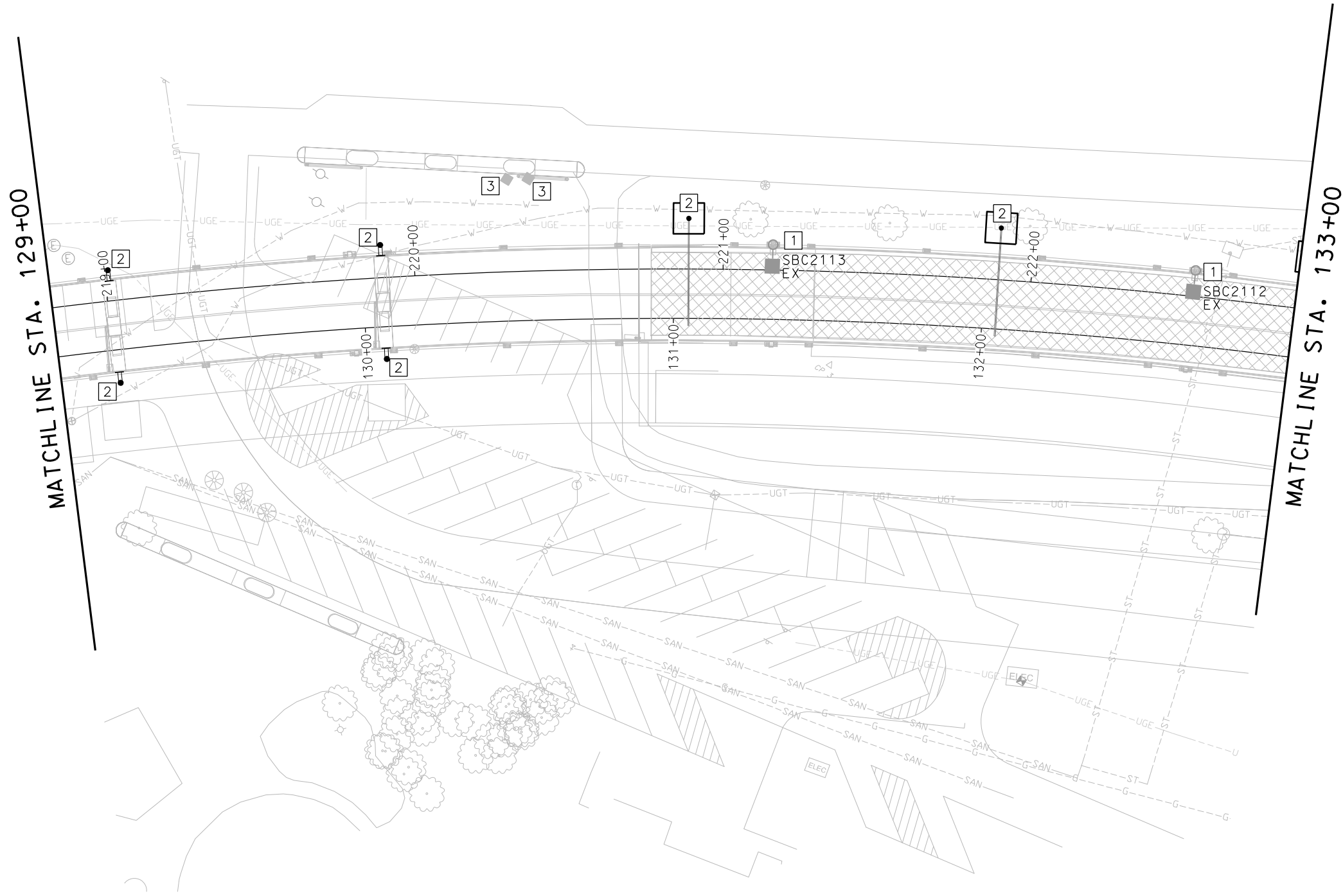


GENERAL NOTES

- 1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.
- 2. REFER TO DETAIL DRAWINGS Y037 & Y038 FOR ADDITIONAL INFORMATION REGARDING INSTALLATION OF OCS POLES ON GRAND BOULEVARD BRIDGE.

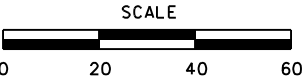
KEYED NOTES

- 1 EXISTING SHOE BOX STREETLIGHT POLE ON THE BRIDGE TO REMAIN. EXISTING SHOE BOX FIXTURE WILL BE REPLACED WITH AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE BY CITY OF KCMO. COORDINATE REPLACEMENT WITH KCMO STREET LIGHTING DEPARTMENT.
- 2 LOCATION OF OCS POLE.
- 3 EXISTING GRAND AND PEDESTRIAN LIGHTING CONTROLLER LOCATIONS. COORDINATE FINAL LOCATIONS WITH PUBLIC WORKS STREET LIGHTING.



REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'		
			CHECKED BY	CKB							NORTHBOUND TRACK LIGHTING PLAN		FILENAME: L106.dgn
			DRAWN BY	RAL			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239		CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	CKB			NOT FOR CONSTRUCTION						VOLUME: 1
			APPROVED BY	AAS									DRAWING NO.: L106
PLOT DATE: 12/22/2022		2:04:26 PM	DATE	12-23-2022	CRAIG KEITH BREWSTER - ENGINEER LICENSE NO. E-2000150002								

NORTHBOUND TRACK
LIGHTING PLAN
STA 129+00 TO STA 133+00

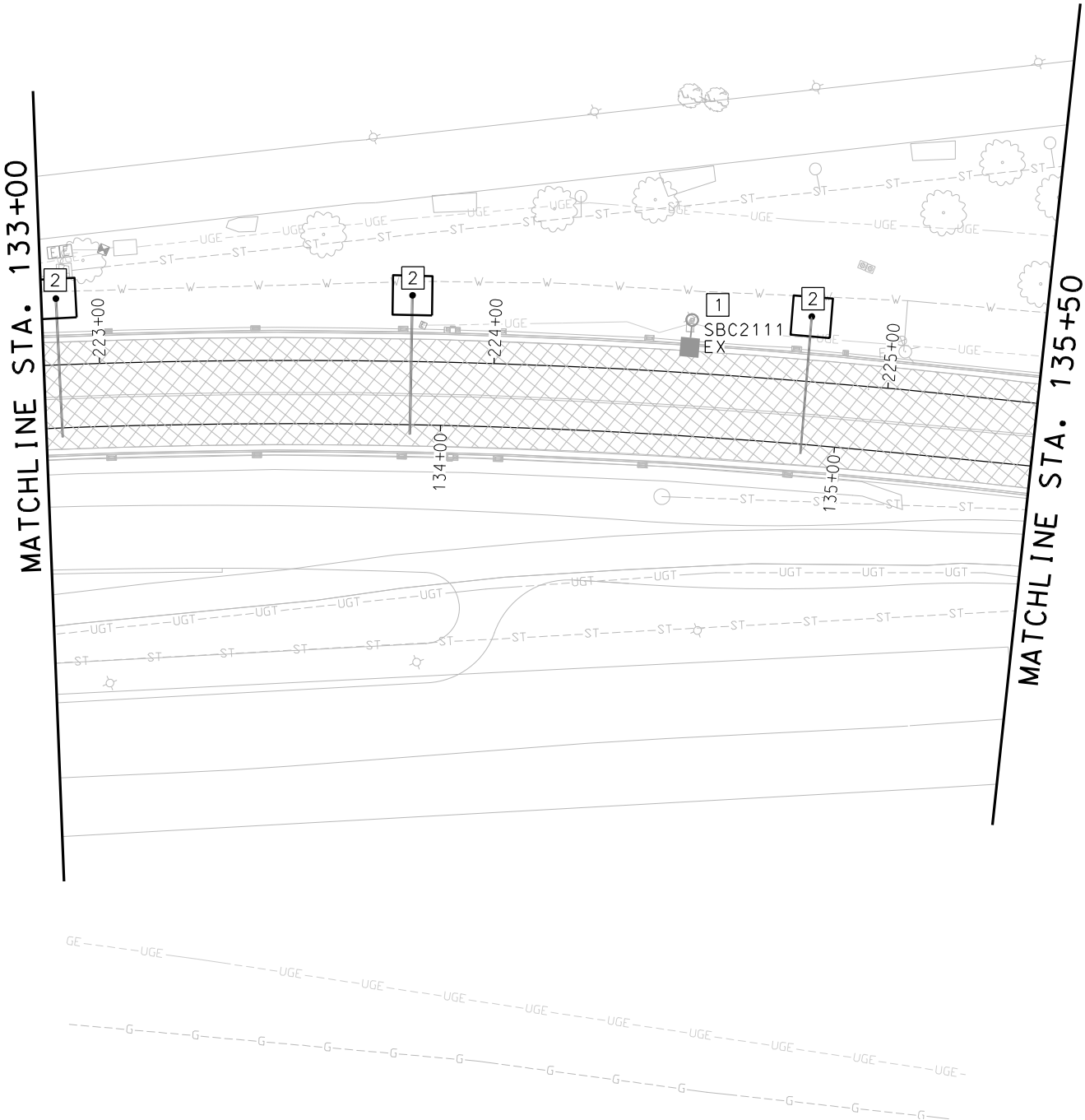


GENERAL NOTES

1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.
2. REFER TO DETAIL DRAWINGS Y037 & Y038 FOR ADDITIONAL INFORMATION REGARDING INSTALLATION OF OCS POLES ON GRAND BOULEVARD BRIDGE.

KEYED NOTES

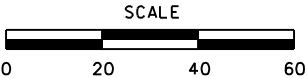
- [1] EXISTING SHOE BOX STREETLIGHT POLE ON THE BRIDGE TO REMAIN. EXISTING SHOE BOX FIXTURE WILL BE REPLACED WITH AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE BY CITY OF KCMO. COORDINATE REPLACEMENT WITH KCMO STREET LIGHTING DEPARTMENT.
- [2] LOCATION OF OCS POLE.



REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	NORTHBOUND TRACK LIGHTING PLAN STA 133+00 TO STA 135+50	SCALE FOR 22"x34": 1" = 20'			
			CHECKED BY	CKB									FILENAME:	L107.dgn		
			DRAWN BY	RAL									CONTRACT NO.:			
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			APPROVED BY	AAS									VOLUME:	1		
PLOT DATE: 12/22/2022			2:04:51 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION						DRAWING NO.:	L107		
												SHEET NO.:		261		

VOLTAGE DROP TABLE & CIRCUIT SIZE			
LIGHTING CONTROLLER	CKT #	SIZE	% VOLTAGE DROP
EXISTING LTC-SBC9001	CIRCUIT #3 (COMBINED OCS POLES & LED FIXTURES)	2 #2 RHH/RHW/USE, 1 #2 GND, 2" CONDUIT	2.53%
LTC-1	CIRCUIT #1 (RELOCATED PEDESTRIAN LIGHT POLES)	2 #6 RHH/RHW/USE, 1 #6 GND, 2" CONDUIT	2.98%

STATIONING TABLE		
ITEM	STATION	OFFSET
RE5	S 227+56	L 22.86
RE6	S 228+64	L 21.00

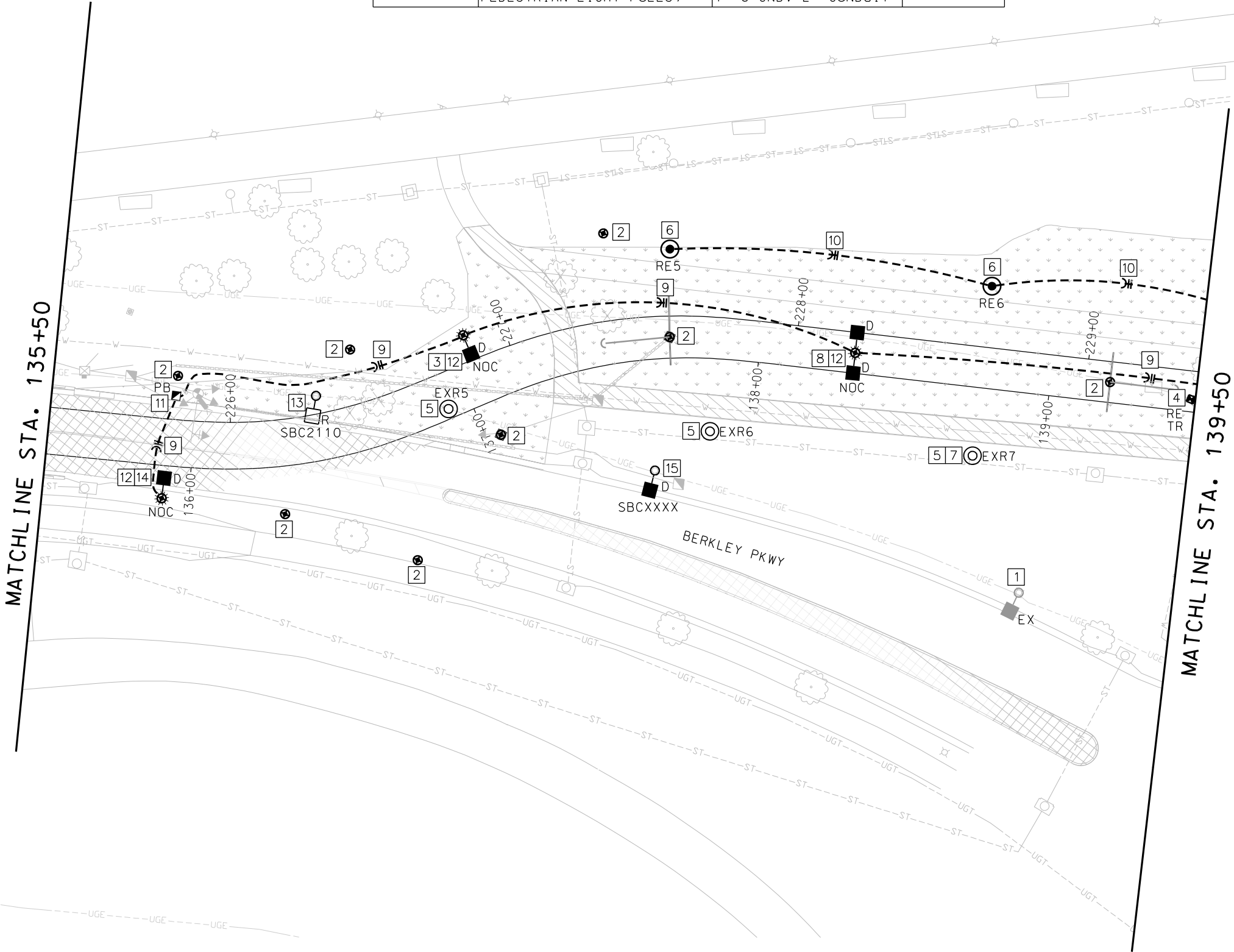


GENERAL NOTES

- FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.
- REFER TO DETAIL DRAWINGS Y037 & Y038 FOR ADDITIONAL INFORMATION REGARDING INSTALLATION OF OCS POLES ON GRAND BOULEVARD BRIDGE.

KEYED NOTES

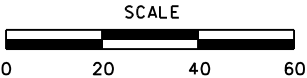
- EXISTING SHOE BOX LED STREETLIGHT POLE TO REMAIN.
- LOCATION OF OCS POLE.
- INSTALL KCMO AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE ON OCS POLE. REFER TO DETAIL 1 ON SHEET L301.
- EXISTING EVERGY PAD MOUNTED TRANSFORMER TO RELOCATED TO NEW LOCATION BY EVERGY.
- EXISTING PEDESTRIAN LIGHT POLE TO BE RELOCATED TO NEW LOCATION AS SHOWN ON PLAN. REMOVE EXISTING CONDUCTORS AND ABANDONED EXISTING CONDUIT FOR RELOCATED EXISTING PEDESTRIAN LIGHT POLES.
- NEW LOCATION OF EXISTING PEDESTRIAN LIGHT POLE. PROVIDE NEW POLE BASE FOR PEDESTRIAN LIGHT POLE AT NEW LOCATION.
- REFER TO NEW LOCATION OF PEDESTRIAN LIGHT POLE ON SHEET L109.
- INSTALL AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE ON OCS POLE. REFER TO DETAIL 2 ON SHEET L301.
- CIRCUIT #3 FOR NEW LED LIGHT ON OCS POLE, 2 #2, 1 #2 GND IN 2" CONDUIT.
- CIRCUIT #1 FOR RELOCATED PEDESTRIAN LIGHT POLES, 2 #6, 1 #6 GND IN 2" CONDUIT.
- NEW PULL BOX. REFER TO PULL BOX DETAIL ON SHEET L300.
- SEE OCS SHEETS FOR STATIONING AND OFFSET OF OCS POLES WITH AMERICAN ELECTRIC LED LIGHTS.
- EXISTING SHOE BOX LIGHT FIXTURE ON 40' POLE TO BE REMOVED. EXISTING LIGHTING CIRCUIT TO REMAIN.
- INSTALL KCMO AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE ON OCS POLE. REFER TO DETAIL 3 ON SHEET L301. CONTACT CITY FOR NEW POLE NUMBER.
- EXISTING SHOE BOX STREETLIGHT POLE WITH CREE LED LIGHT FIXTURE. REPLACE EXISTING FIXTURE WITH NEW KCMO AMERICAN ELECTRIC TYPE 'D' LED LIGHT FIXTURE. COORDINATE STREET LIGHTING NUMBER WITH KCMO STREET LIGHTING DEPARTMENT. COORDINATE STREET LIGHTING REPLACEMENT FIXTURE WITH KCMO STREET LIGHTING DEPARTMENT.



REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 20' FILENAME: L108.dgn CONTRACT NO.: CONTRACT NO. ... VOLUME: 1 DRAWING NO.: SHEET NO.: L108 262	
			CHECKED BY	CKB			 HDR Engineering, Inc.		 Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239				
			DRAWN BY	RAL			NOT FOR CONSTRUCTION		NORTHBOUND TRACK LIGHTING PLAN STA 135+50 TO STA 139+50				
			CHECKED BY	CKB									
			APPROVED BY	AAS									
PLOT DATE: 12/22/2022			2:05:22 PM		DATE		12-23-2022						

VOLTAGE DROP TABLE & CIRCUIT SIZE			
LIGHTING CONTROLLER	CKT #	SIZE	% VOLTAGE DROP
EXISTING LTC-SBC9001	CIRCUIT #3 (COMBINED OCS POLES & LED FIXTURES)	2 #2 RHH/RHW/USE, 1 #2 GND, 2" CONDUIT	2.53%
EXISTING LTC-SBC9001	CIRCUIT #4 (COMBINED OCS POLES & LED FIXTURES)	2 #2 RHH/RHW/USE, 1 #2 GND, 2" CONDUIT	2.47%
LTC-1	CIRCUIT #1 (RELOCATED PEDESTRIAN LIGHT POLES)	2 #6 RHH/RHW/USE, 1 #6 GND, 2" CONDUIT	2.98%

STATIONING TABLE		
ITEM	STATION	OFFSET
RE6	S 229+55	L 21.00
RE7	S 231+02	L 21.00
RE8	S 232+52	L 21.00

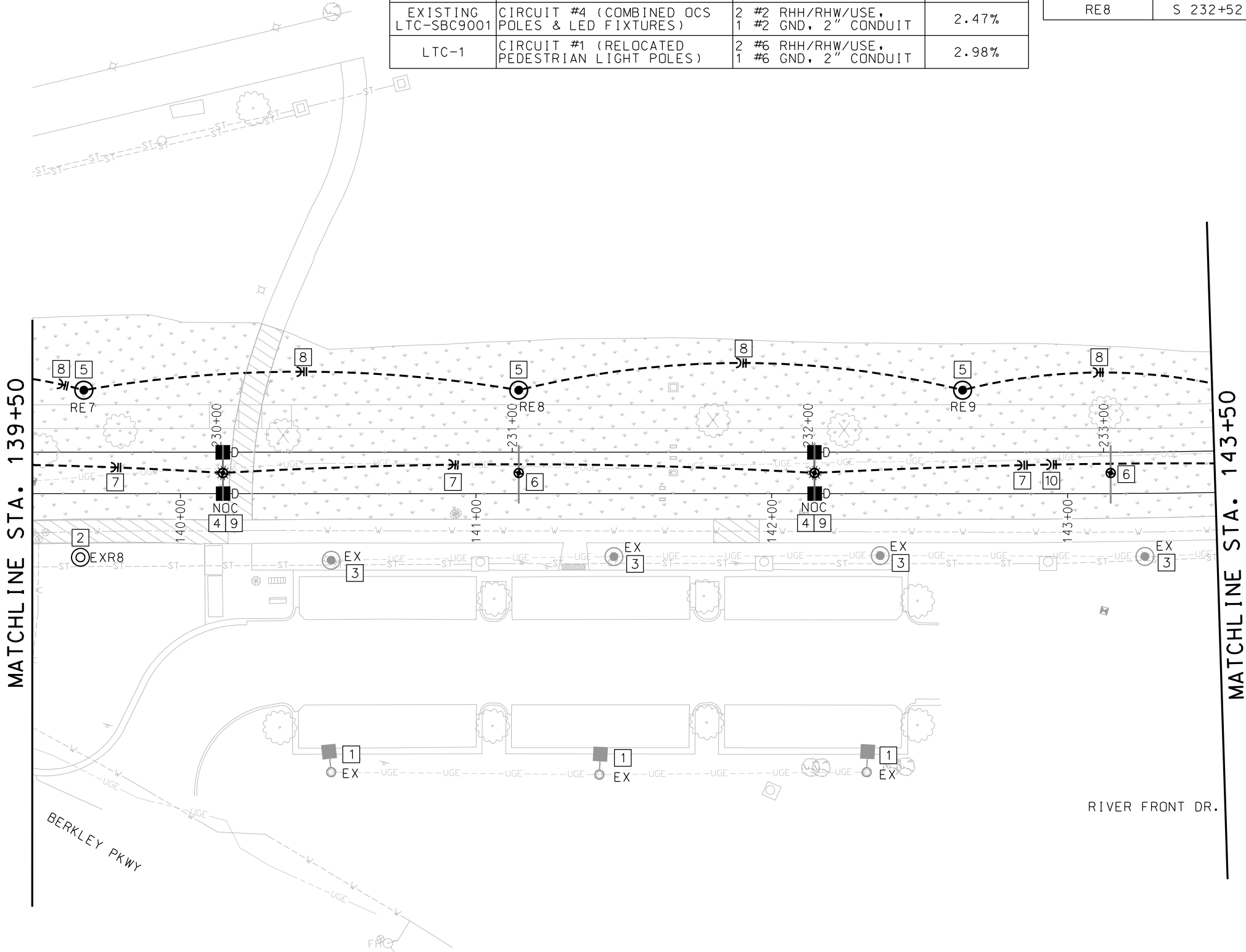


GENERAL NOTES

1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.

KEYED NOTES

- 1 EXISTING SHOE BOX LED STREETLIGHT POLE TO REMAIN.
- 2 EXISTING PEDESTRIAN LIGHT POLE TO BE RELOCATED TO NEW LOCATION AS SHOWN ON PLAN. REMOVE EXISTING CONDUCTORS AND ABANDONED EXISTING CONDUIT FOR RELOCATED EXISTING PEDESTRIAN LIGHT POLES.
- 3 EXISTING PEDESTRIAN LIGHT POLE TO REMAIN. CONTRACTORS TO ENSURE EXISTING PEDESTRIAN LIGHT POLE HAS POWER AND WORKING PROPERLY.
- 4 INSTALL KCMO AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE ON OCS POLE. REFER TO DETAIL 02 ON SHEET L301.
- 5 NEW LOCATION OF EXISTING PEDESTRIAN LIGHT POLE. PROVIDE NEW POLE BASE FOR PEDESTRIAN LIGHT POLE AT NEW LOCATION.
- 6 LOCATION OF OCS POLE.
- 7 CIRCUIT #3 FOR NEW LED LIGHT ON OCS POLE, 2 #2, 1 #2 GND IN 2" CONDUIT.
- 8 CIRCUIT #1 FOR RELOCATED PEDESTRIAN LIGHT POLES, 2 #6, 1 #6 GND IN 2" CONDUIT.
- 9 SEE OCS SHEETS FOR STATIONING AND OFFSET OF OCS POLES WITH AMERICAN ELECTRIC LED LIGHTS.
- 10 CIRCUIT #4 FOR NEW LED LIGHT ON OCS POLE, 2 #2, 1 #2 GND IN 2" CONDUIT.



REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 20'		
			CHECKED BY	CKB					10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			NORTHBOUND TRACK LIGHTING PLAN		FILENAME: L109.dgn
			DRAWN BY	RAL								CONTRACT NO.:		CONTRACT NO. ***
			CHECKED BY	CKB								VOLUME:		1
			APPROVED BY	AAS								DRAWING NO.:		SHEET NO.:
PLOT DATE: 12/22/2022			2:05:55 PM		DATE: 12-23-2022		NOT FOR CONSTRUCTION				L109		263	

VOLTAGE DROP TABLE & CIRCUIT SIZE			
LIGHTING CONTROLLER	CKT #	SIZE	% VOLTAGE DROP
EXISTING LTC-SBC9001	CIRCUIT #3 (COMBINED OCS POLES & LED FIXTURES)	2 #2 RHH/RHW/USE, 1 #2 GND, 2" CONDUIT	2.53%
EXISTING LTC-SBC9001	CIRCUIT #4 (COMBINED OCS POLES & LED FIXTURES)	2 #2 RHH/RHW/USE, 1 #2 GND, 2" CONDUIT	2.47%
LTC-1	CIRCUIT #1 (RELOCATED PEDESTRIAN LIGHT POLES)	2 #6 RHH/RHW/USE, 1 #6 GND, 2" CONDUIT	2.98%
LTC-1	CIRCUIT #2 (RELOCATED PEDESTRIAN LIGHT POLES)	2 #8 RHH/RHW/USE, 1 #8 GND, 2" CONDUIT	1.13%

STATIONING TABLE		
ITEM	STATION	OFFSET
RE10	S 233+44	L 21.15
RE11	N 143+46	R 21.05
RE12	S 234+30	L 30.76
RE13	S 235+15	L 21.03
RE14	N 146+54	L 35.00

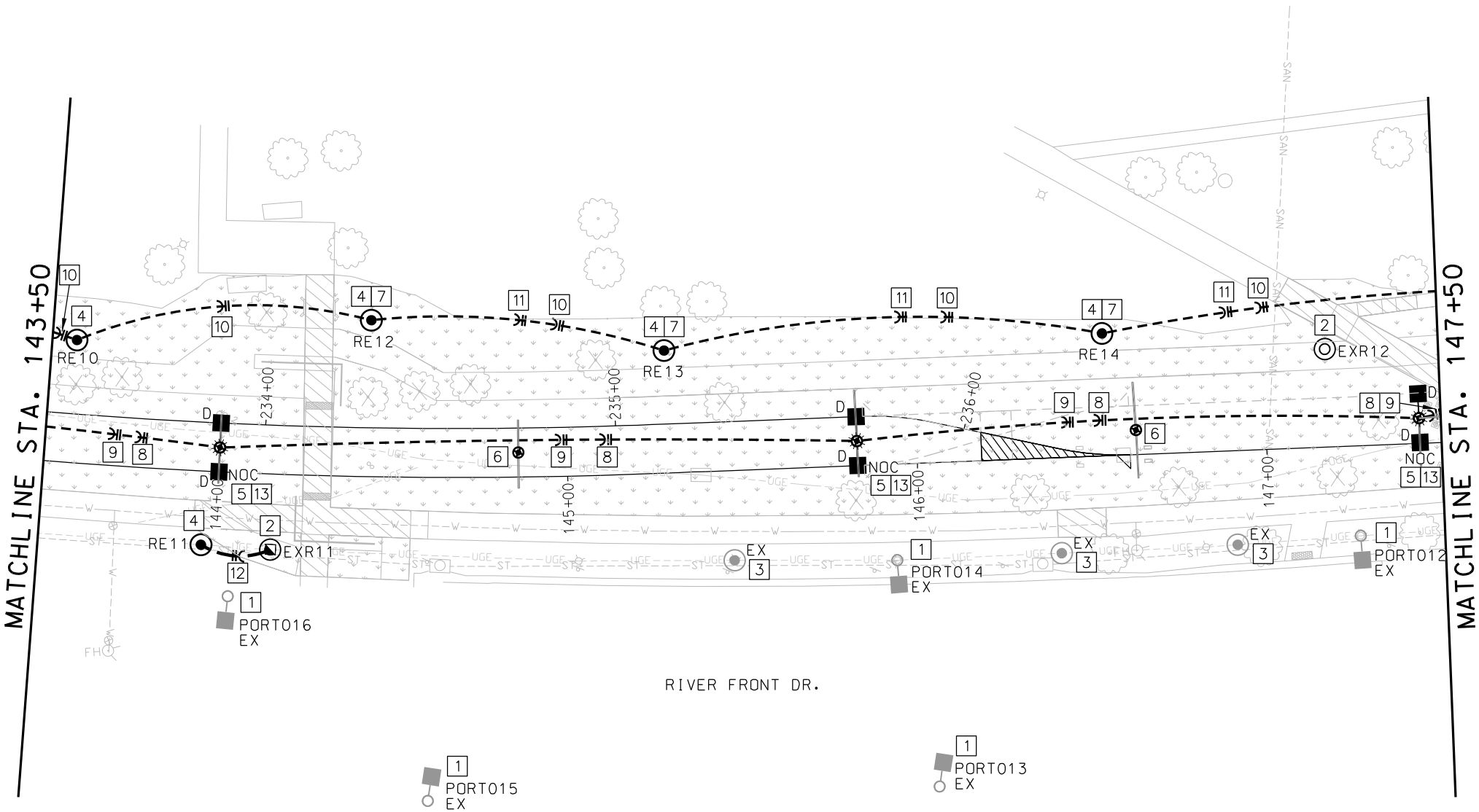


GENERAL NOTES

1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.

KEYED NOTES

- 1 EXISTING SHOE BOX 400-WATT MH STREETLIGHT POLE TO REMAIN. EXISTING LIGHT POLES OWNED AND MAINTAINED BY PORT AUTHORITY.
- 2 EXISTING PEDESTRIAN LIGHT POLE TO BE RELOCATED TO NEW LOCATION AS SHOWN ON PLAN. REMOVE EXISTING CONDUCTORS AND ABANDONED EXISTING CONDUIT FOR RELOCATED EXISTING PEDESTRIAN LIGHT POLES.
- 3 EXISTING PEDESTRIAN LIGHT POLE TO REMAIN. CONTRACTORS TO ENSURE EXISTING PEDESTRIAN LIGHT POLE HAS POWER AND WORKING PROPERLY.
- 4 NEW LOCATION OF EXISTING PEDESTRIAN LIGHT POLE. PROVIDE NEW POLE BASE FOR PEDESTRIAN LIGHT POLE AT NEW LOCATION.
- 5 INSTALL KCMO AMERICAN ELECTRIC TYPE 'D' LIGHT FIXTURE ON OCS POLE. REFER TO DETAIL 02 ON SHEET L301.
- 6 LOCATION OF OCS POLE.
- 7 REFER TO SHEET L111 FOR ORIGINAL LOCATION OF EXISTING PEDESTRIAN LIGHT POLE THAT NEED TO BE RELOCATED.
- 8 CIRCUIT #3 FOR NEW LED LIGHT ON OCS POLE, 2 #2, 1 #2 GND IN 2" CONDUIT.
- 9 CIRCUIT #4 FOR NEW LED LIGHT ON OCS POLE, 2 #2, 1 #2 GND IN 2" CONDUIT.
- 10 CIRCUIT #1 FOR RELOCATED PEDESTRIAN LIGHT POLES, 2 #6, 1 #6 GND IN 2" CONDUIT.
- 11 CIRCUIT #2 FOR RELOCATED PEDESTRIAN LIGHT POLES, 2 #8, 1 #8 GND IN 2" CONDUIT.
- 12 EXTEND EXISTING CONDUIT AND WIRE TO NEW LOCATION OF PEDESTRIAN LIGHT POLE.
- 13 SEE OCS SHEETS FOR STATIONING AND OFFSET OF OCS POLES WITH AMERICAN ELECTRIC LED LIGHTS.



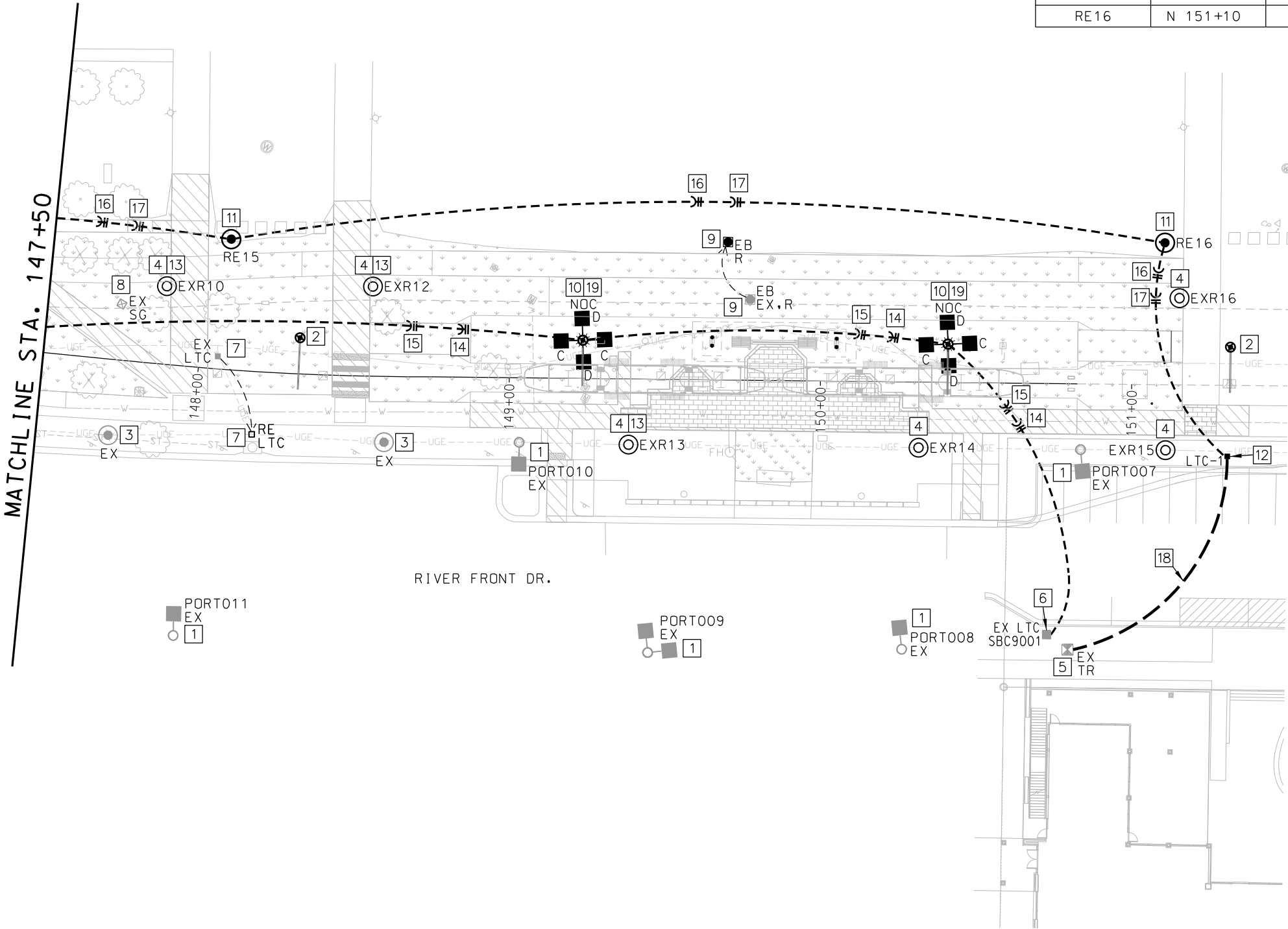
REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	NORTHBOUND TRACK LIGHTING PLAN STA 143+50 TO STA 147+50	SCALE FOR 22"x34": 1" = 20'		DRAWING NO.: SHEET NO.: L110 264	
			CHECKED BY	CKB												
			DRAWN BY	RAL												
			CHECKED BY	CKB												
			APPROVED BY	AAS												
PLOT DATE: 12/22/2022			2:06:20 PM		DATE		12-23-2022		NOT FOR CONSTRUCTION							

VOLTAGE DROP TABLE & CIRCUIT SIZE			
LIGHTING CONTROLLER	CKT #	SIZE	% VOLTAGE DROP
EXISTING LTC-SBC9001	CIRCUIT #3 (COMBINED OCS POLES & LED FIXTURES)	2 #2 RHH/RHW/USE, 1 #2 GND, 2" CONDUIT	2.53%
EXISTING LTC-SBC9001	CIRCUIT #4 (COMBINED OCS POLES & LED FIXTURES)	2 #2 RHH/RHW/USE, 1 #2 GND, 2" CONDUIT	2.47%
LTC-1	CIRCUIT #1 (RELOCATED PEDESTRIAN LIGHT POLES)	2 #6 RHH/RHW/USE, 1 #6 GND, 2" CONDUIT	2.98%
LTC-1	CIRCUIT #2 (RELOCATED PEDESTRIAN LIGHT POLES)	2 #8 RHH/RHW/USE, 1 #8 GND, 2" CONDUIT	1.13%

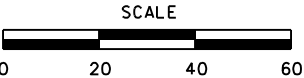
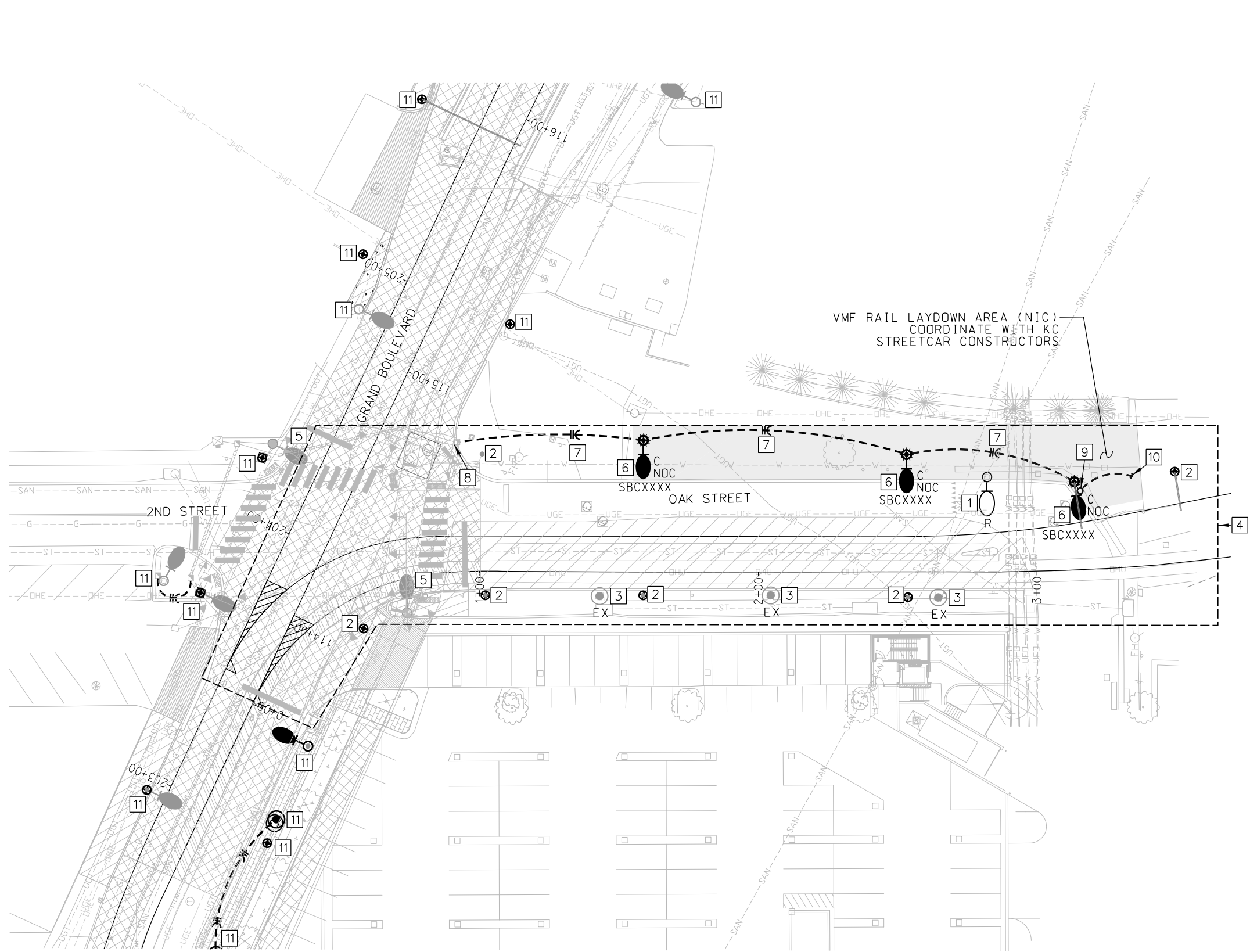
GENERAL NOTES		
1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.		
STATIONING TABLE		
ITEM	STATION	OFFSET
RE15	N 148+07	L 41.93
RELOCATED LTC	N 148+18	R 20.17
ELEC PWR BOX	N 149+70	L 44.38
RE16	N 151+10	L 45.59



- KEYED NOTES
- EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
 - LOCATION OF OCS POLE.
 - EXISTING PEDESTRIAN LIGHT POLE TO REMAIN. CONTRACTORS TO ENSURE EXISTING PEDESTRIAN LIGHT POLE HAS POWER AND WORKING PROPERLY.
 - EXISTING PEDESTRIAN LIGHT POLE TO BE RELOCATED TO NEW LOCATION AS SHOWN ON PLAN. REMOVE EXISTING CONDUCTORS AND ABANDONED EXISTING CONDUIT FOR RELOCATED EXISTING PEDESTRIAN LIGHT POLES.
 - EXISTING EVERGY PAD MOUNTED TRANSFORMER TO REMAIN.
 - EXISTING STREET LIGHTING CONTROLLER TO REMAIN.
 - EXISTING STREET LIGHTING CONTROLLER TO BE RELOCATED TO NEW LOCATION.
 - EXISTING EVERGY PAD MOUNTED SWITCH GEAR TO BE RELOCATED TO NEW LOCATION BY EVERGY. NEW LOCATION WILL BE DETERMINED BY EVERGY.
 - EXISTING ELECTRICAL POWER BOX TO BE RELOCATED BEHIND SIDEWALK.
 - INSTALL KCMO AMERICAN ELECTRIC TWO TYPE 'C' AND TWO 'D' LIGHT FIXTURE ON OCS POLE. REFER TO DETAIL 3 ON SHEET L301.
 - NEW LOCATION OF EXISTING PEDESTRIAN LIGHT POLE. PROVIDE NEW POLE BASE FOR PEDESTRIAN LIGHT POLE AT NEW LOCATION.
 - LOCATION OF NEW 4-CIRCUIT LIGHTING CONTROLLER. REFER TO 4-CIRCUIT LIGHTING CONTROLLER DETAIL ON SHEET L303.
 - REFER TO NEW LOCATION OF PEDESTRIAN LIGHT POLE ON SHEET L110.
 - CIRCUIT #3 FOR NEW LED LIGHT ON OCS POLE, 2 #2, 1 #2 GND IN 2" CONDUIT.
 - CIRCUIT #4 FOR NEW LED LIGHT ON OCS POLE, 2 #2, 1 #2 GND IN 2" CONDUIT.
 - CIRCUIT #1 FOR RELOCATED PEDESTRIAN LIGHT POLES, 2 #6, 1 #6 GND IN 2" CONDUIT.
 - CIRCUIT #2 FOR RELOCATED PEDESTRIAN LIGHT POLES, 2 #8, 1 #8 GND IN 2" CONDUIT.
 - PROVIDE 3" SCHEDULE 40 PVC WITH EVERGY PROVIDED URD CABLE FROM 4-CIRCUIT LIGHTING CONTROLLER TO NEW LOCATION OF EVERGY PAD MOUNTED TRANSFORMER. COORDINATE WITH EVERGY CONTACT PERSON: JOEY WHITE, E-MAIL JOEY.WHITE@EVERGY.COM.
 - SEE OCS SHEETS FOR STATIONING AND OFFSET OF OCS POLES WITH AMERICAN ELECTRIC LED LIGHTS.



REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION			SCALE FOR 22"x34":	
			CHECKED BY	CKB					10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856					
			DRAWN BY	RAL								FILENAME: L111.dgn		
			CHECKED BY	CKB								CONTRACT NO.:		
			APPROVED BY	AAS								CONTRACT NO. ***		
PLOT DATE: 12/22/2022			2:06:45 PM		DATE: 12-23-2022		NOT FOR CONSTRUCTION				DRAWING NO.:		SHEET NO.:	
											L111		265	



GENERAL NOTES

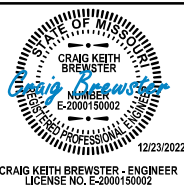
1. FOR GENERAL NOTES AND SYMBOL LEGEND, SEE SHEET L001.

KEYED NOTES

- 1 EXISTING COBRA HEAD 400-WATT HPS STREET LIGHT POLE TO BE REMOVED.
- 2 LOCATION OF OCS POLE.
- 3 EXISTING PEDESTRIAN LIGHT POLE TO REMAIN.
- 4 OAK STREET TO VMF AREA OF WORK. REFER TO LIGHTING SHEET L102 FOR WORK OUTSIDE OF THIS AREA.
- 5 TRAFFIC SIGNAL LIGHTS SHOWN FOR REFERENCE ONLY REFER TO L102 FOR FURTHER DETAILS.
- 6 INSTALL KCMO LED LUMINAIRE TYPE 'C' ON OCS POLE. REFER TO DETAIL 2 ON SHEET L302. COORDINATE SHEET LIGHTING NUMBER WITH KCMO STREET LIGHTING DEPARTMENT.
- 7 2 #6, 1 #6 GND IN 2" CONDUIT.
- 8 CONNECT LIGHTING CIRCUIT FOR KCMO LED LUMINAIRE TYPE 'C' ON OCS POLE TO LIGHTING CIRCUIT FOR LED LUMINAIRE TYPE 'D' ON TRAFFIC SIGNAL POLE. INTERCEPT LIGHTING CIRCUIT AT PULL BOX FOR TRAFFIC SIGNAL POLE.
- 9 COORDINATE EXACT LOCATION FOR BLANKOUT SIGN WITH INSTALLER.
- 10 PROVIDE 3/C #8 IN 2" CONDUIT FROM BLANKOUT SIGN TO GATE CONTROLLER APPROXIMATELY 370' EAST.
- 11 SHOWN FOR REFERENCE ONLY REFER TO L102 FOR FURTHER DETAILS.

REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		2:07:12 PM

DESIGNED BY	AAS
CHECKED BY	CKB
DRAWN BY	RAL
CHECKED BY	CKB
APPROVED BY	AAS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

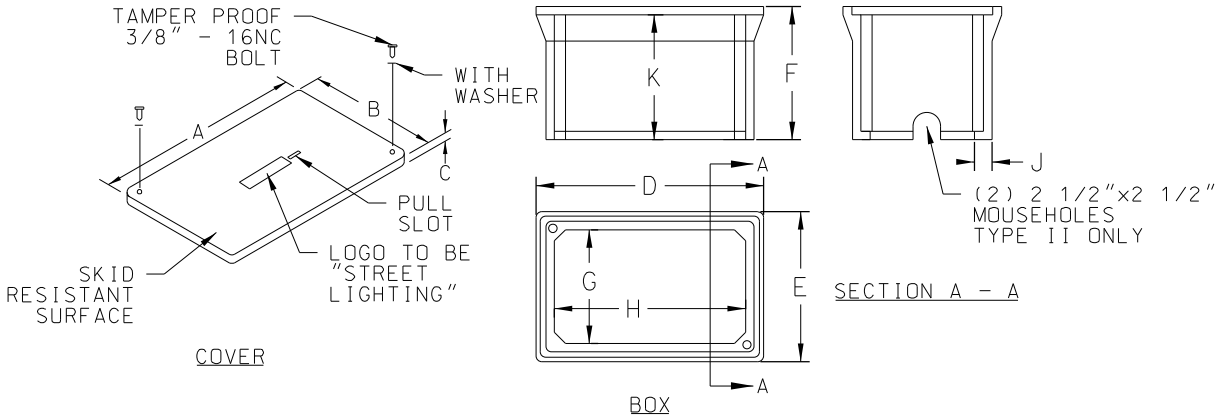
NORTHBOUND TRACK
LIGHTING PLAN
2ND STREET TO VMF

SCALE FOR 22"x34": 1" = 20'	
FILENAME: L112.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.: L112	SHEET NO.: 266

* STREET LIGHTING SUMMARY OF QUANTITIES			
ITEM NO.	DESCRIPTION	UNIT	PLAN QUANTITY
1	KCMO LED LIGHT FIXTURE AMERICAN ELECTRIC TYPE 'D' ON OCS POLE (NOC)	EA	18
2	KCMO LED LIGHT FIXTURE AMERICAN ELECTRIC TYPE 'C' ON OCS POLE (NOC)	EA	4
3	KCMO LED LIGHT FIXTURE SIGNIFY LUMEC TYPE 'C' ON OCS POLE (NOC)	EA	3
4	KCMO LED LIGHT FIXTURE SIGNIFY LUMEC TYPE 'D' ON 35' STREET LIGHT POLE	EA	1
5	8' ARM FOR KCMO LED LIGHT FIXTURE SIGIFY LUMEC TYPE 'C' ON OCS POLE	EA	3
6	8' ARM FOR KCMO LED LIGHT FIXTURE SIGNIFY LUMEC TYPE 'D' ON STREET LIGHT POLE	EA	1
7	35' STREET LIGHT POLE TYPE 'D'	EA	1
8	1 #10 RHW/USE INTERNAL POLE WIRE	LF	2300
9	3" HDPE CONDUIT FOR EVERGY FEED	LF	150
10	1#6 AWG BARE COPPER WIRE	LF	150
11	2#2 RHH/RHW/USE, 1 #2 GND. FOR LIGHTING CIRCUIT #3, COMBINED OCS POLE AND KCMO LED LIGHT FIXTURE TYPE D ON EXISTING LTC, SBC9001.	LF	1500
12	2#4 RHH/RHW/USE, 1 #4 GND. FOR LIGHTING CIRCUIT #4, COMBINED OCS POLE AND KCMO LED LIGHT FIXTURES TYPE D AND TYPE C ON EXISTING LTC, SBC9001.	LF	900
13	2#6 RHH/RHW/USE, 1 #6 GND. FOR LIGHTING CIRCUIT #1, RELOCATED PEDESTRIAN LIGHT POLES ON NEW STREET LIGHTING CONTROLLER LTC-1	LF	1700
14	2#8 RHH/RHW/USE, 1 #8 GND. FOR LIGHTING CIRCUIT #2, RELOCATED PEDESTRIAN LIGHT POLES ON NEW STREET LIGHTING CONTROLLER LTC-1	LF	500
15	2#6 RHH/RHW/USE, 1 #6 GND. FOR LIGHTING CIRCUIT FOR KCMO LED LIGHT FIXTURE TYPE 'C' ON OCS POLES ON 2ND STREET	LF	250
16	2#8 RHH/RHW/USE, 1 #8 GND. FOR STREET LIGHTS ON TRAFFIC SIGNAL POLES	LF	350
17	2" PVC CONDUIT FOR LIGHTING CIRCUITS #3 AND #4 ON EXISTING LTC, SBC9001 AND LIGHTING CIRCUITS #1 AND #2 ON NEW STREET LIGHTING CONTROLLER LTC-1	LF	4850
18	FUSE KITS	EA	26
19	NON-FUSED FUSE KITS	EA	52
20	CABLE RETAINERS	EA	26
21	POLE BASE FOR RELOCATED PEDESTRIAN LIGHT POLE	EA	16
22	ID TAG FOR STREET LIGHT AND NEW STREET LIGHTING CONTROLLER	EA	26
23	NEW 4-CIRCUIT STREET LIGHTING CONTROLLER LTC-1 FOR RELOCATED PEDESTRIAN LIGHT POLES	EA	1
24	CONCRETE FOUNDATIONS FOR NEW STREET LIGHTING CONTROLLER LTC-1	EA	1
25	RELOCATED EXISTING LUMINAIRE AND EXISTING POLE FOR STREET LIGHT POLE	EA	1
26	NEW POLE BASE FOR RELOCATED EXISTING AND NEW STREET STREET LIGHT POLES	EA	2
27	RELOCATED EXISTING PEDESTRIAN LIGHT POLE	EA	16
28	NEW POLE BASE FOR RELOCATED PEDESTRIAN LIGHT POLES	EA	16
29	RELOCATED EXISTING LED STREET LIGHT ON OCS POLE	EA	2
30	NEW OCS POLE ATTACHMENT FOR NEW LED LUMINAIRE ON OCS POLES	EA	25
31	TRENCH AND BACKFILL	LF	4850
32	REMOVAL OF EXISTING CONDUCTORS FOR RELOCATED PEDESTRIAN LIGHT POLES	LF	800
33	NEW PULL BOXES	EA	1
34	POWER HOOKUP FOR EVERGY POWER SOURCE	EA	1

* NOTE: QUANTITIES ARE FOR BID COMPARISON PURPOSE ONLY. CONTRACTOR SHALL PROVIDE ALL MATERIAL AND LABOR FOR A COMPLETE AND WORKING LIGHTING SYSTEM.

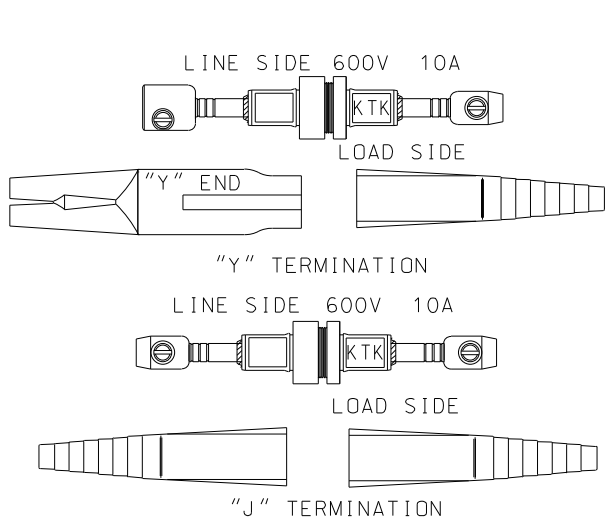
TYPE	DIMENSIONS (IN.)									
	A	B	C	D	E	F	G	H	J	K
II	18-1/2	11-1/2	3/4	20-1/2	13-1/2	12	10-1/4	17-1/4	3/8	11-1/4



1 FIBERGLASS REINFORCED POLYMER CONCRETE JUNCTION/PULL BOX DETAILS
NOT TO SCALE

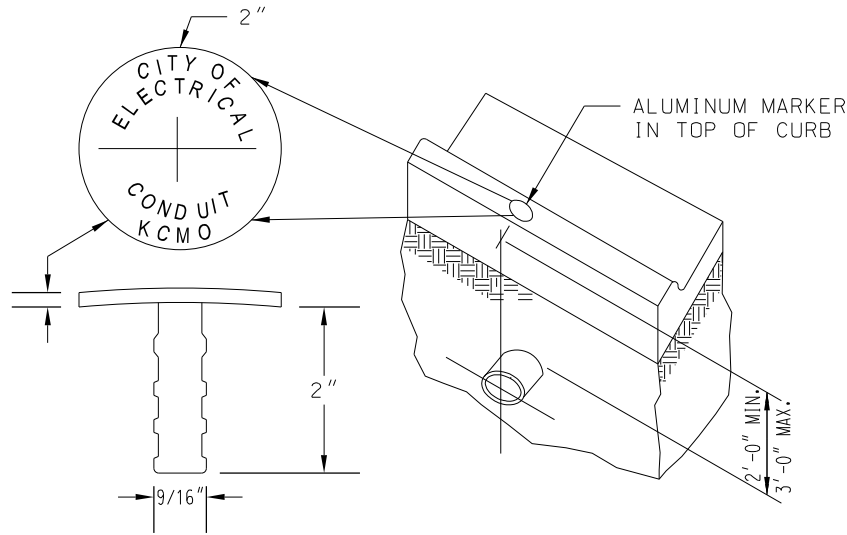
2 STREET LIGHT MARKER DETAIL
NOT TO SCALE
(PROVIDED BY CONTRACTOR)

S
H
J
3
4
2
1



FUSE SHALL BE 10 AMP - TYPE KTK-10 RESPECTIVE ELECTRICAL CONNECTOR KITS SHALL BE BUSSMAN: HEB-JW-RLC-J, HEB-JW-RYC, HET-JW-RLC-J (NON-FUSED NEUTRAL), HET-JW-RYC (NON-FUSED NEUTRAL), OR APPROVED EQUALS.

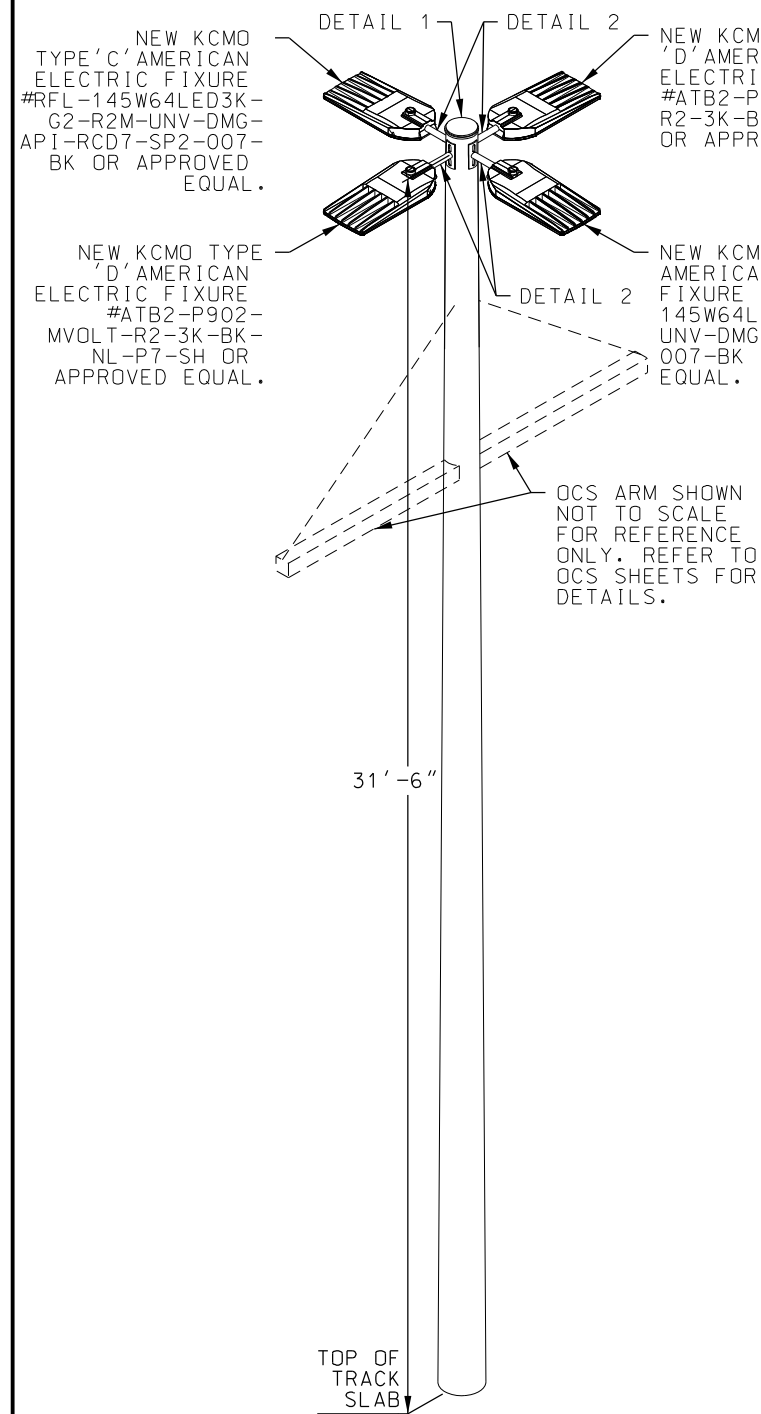
3 BREAK AWAY FUSE KIT DETAILS
NOT TO SCALE



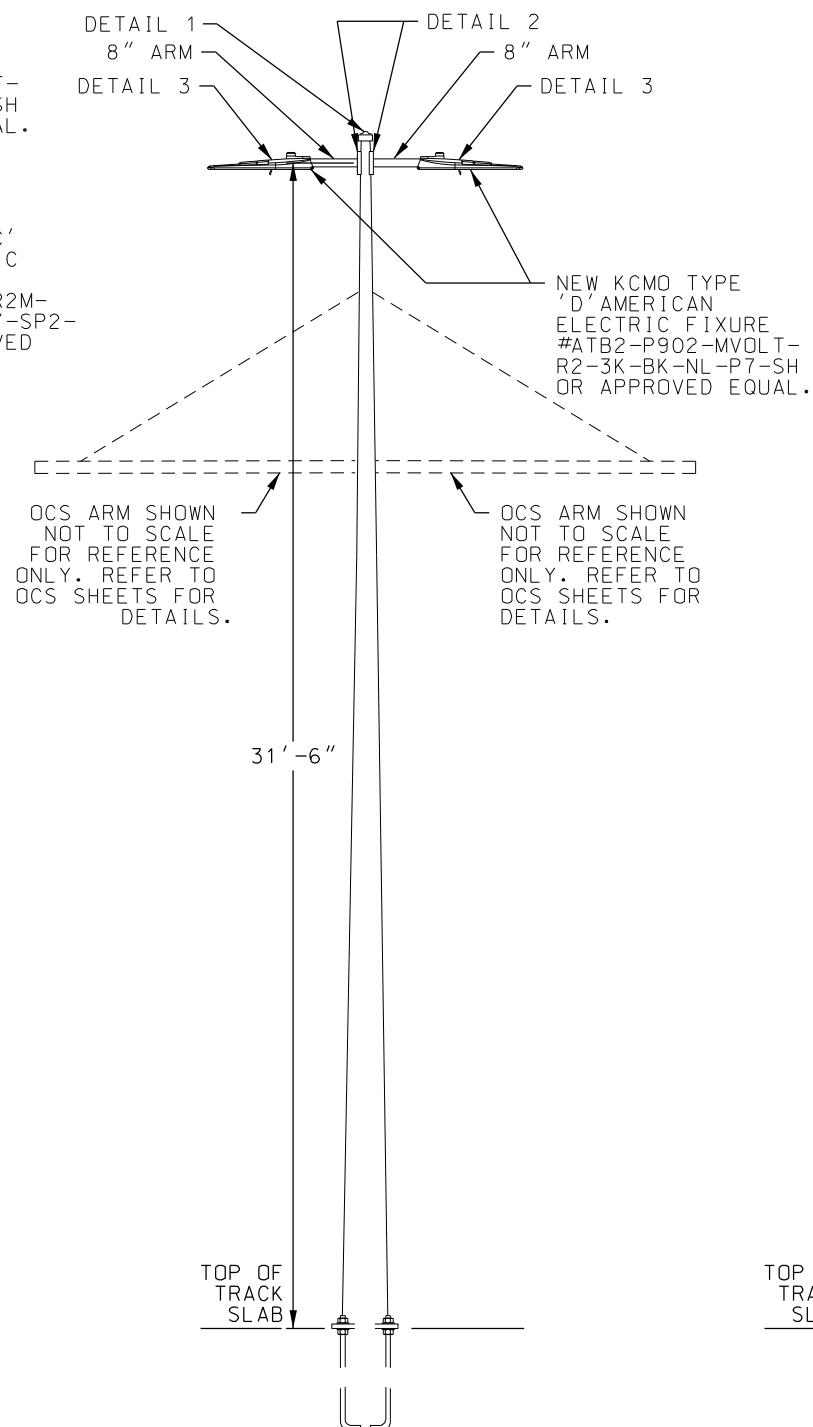
NOTE: CONDUIT SHALL BE INSTALLED 2'-3" BELOW THE TOP OF CURB ELEVATION. AN ALUMINUM MARKER SHALL BE PLACED IN THE TOP OF THE CURB DIRECTLY OVER THE CONDUIT. ALUMINUM MARKERS TO BE FURNISHED AND INSTALLED BY THE CONTRACTOR.

4 CONDUIT MARKING DETAIL
NOT TO SCALE

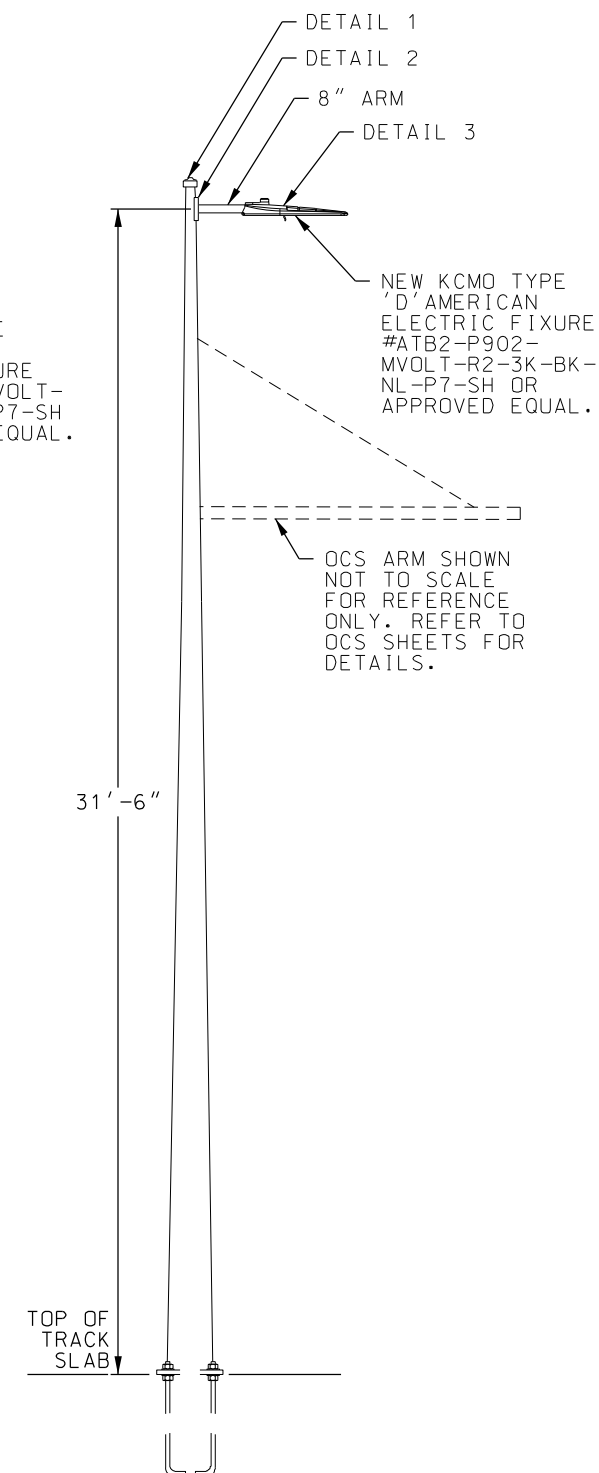
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			CHECKED BY	CKB								
			DRAWN BY	RAL								
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			APPROVED BY	AAS								
PLOT DATE: 12/22/2022			2:07:37 PM						NOT FOR CONSTRUCTION			



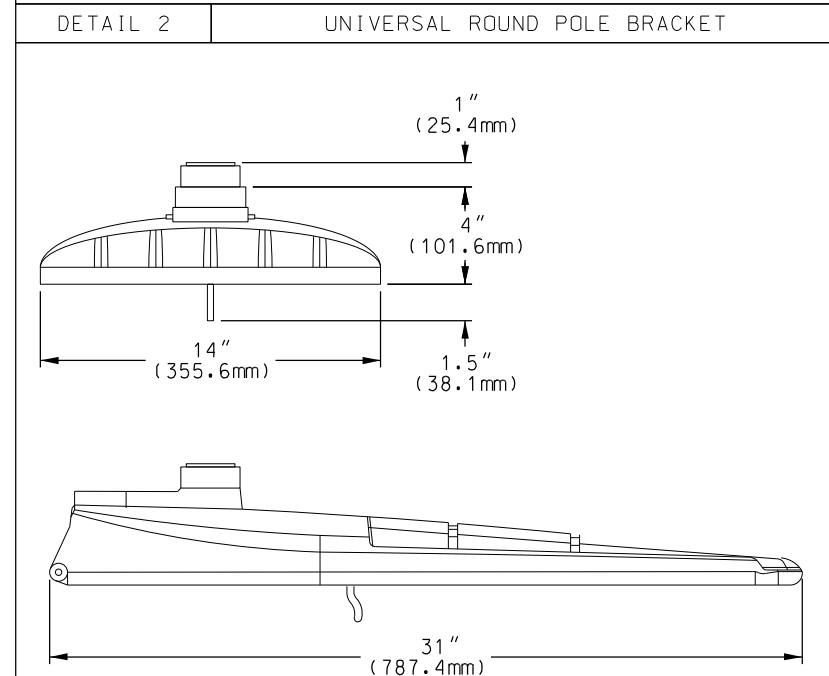
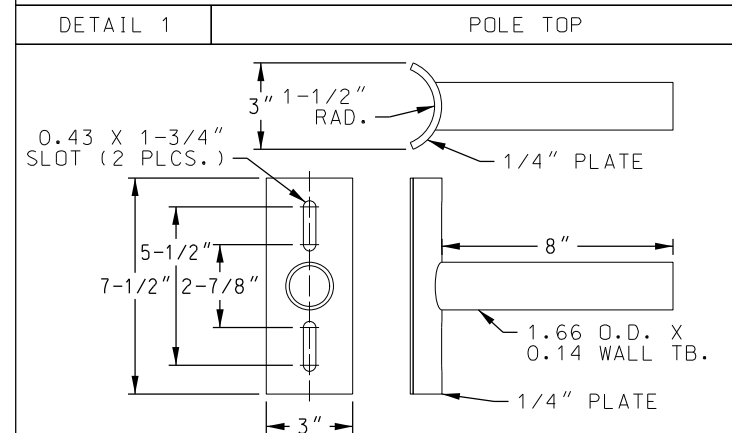
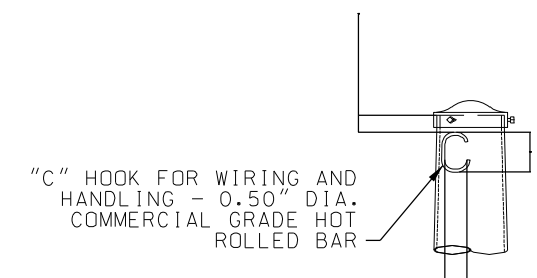
COMBINED NEW OCS POLE WITH NEW
QUAD KCMO LED STREETLIGHT TYPE
'C' & 'D' FOR BERKLEY RIVERFRONT

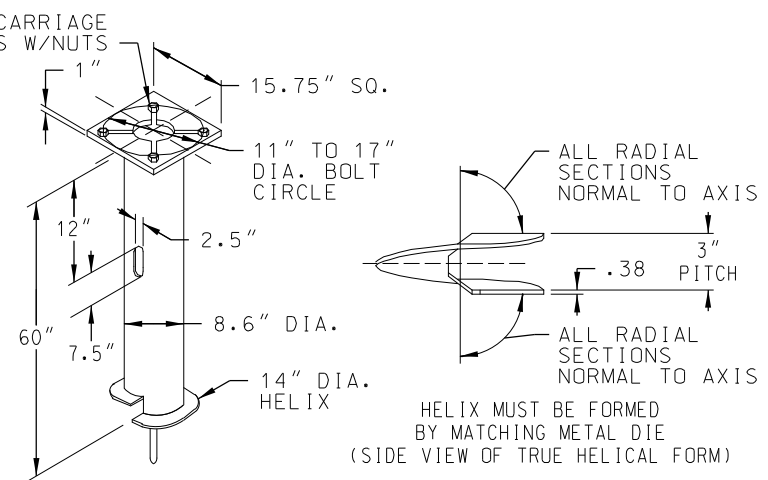
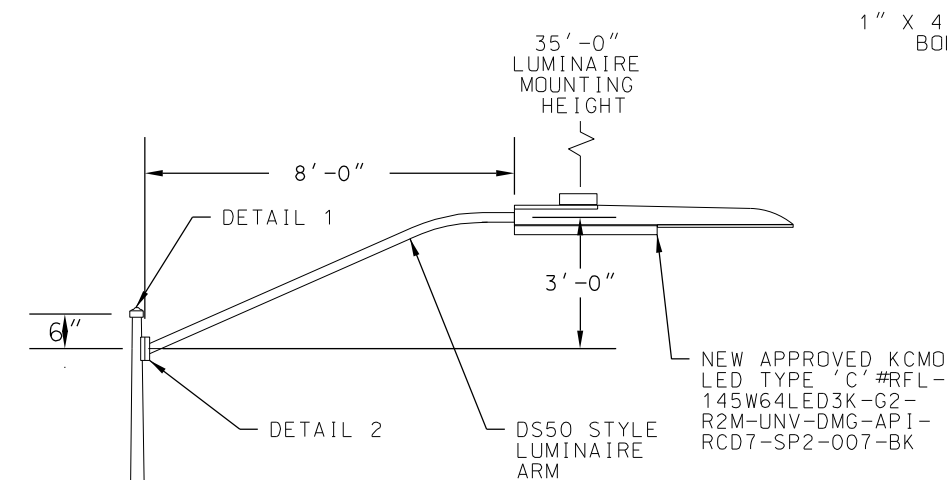


COMBINED NEW OCS POLE WITH NEW
TWIN KCMO LED STREETLIGHT TYPE
'D' FOR BERKLEY RIVERFRONT



COMBINED NEW QCS POLE WITH
NEW KCMO LED STREETLIGHT TYPE
'D' FOR BERKLEY RIVERFRONT





CONTRACTOR TO VERIFY THE SIZE OF THE SCREW IN POLE BASE AND SIZE OF BOLTS IN THE SCREW IN POLE BASE WITH THE LIGHT POLE PRIOR TO ORDERING AND BEFORE INSTALLING THE SCREW IN POLE BASE IN THE GROUND

- LIGHTING POLE 'D' DESIGN PARAMETERS**
- LUMINAIRE:**
NEW APPROVED KCMO LED TYPE 'D' SIGNIFY LUMEC #RFL-241W112LED3K-G2-R2M-UNV-DMG-API-RCD7-SP2-007-BK
 - POLE:**
POLE "D"
35' FT ROUND TAPERED ALUMINUM POLE WITH BLACK COLOR FOR THE POLE AND ARM, 4"x6" HANDHOLE. ONE 8 FT ARM TO BE INSTALLED.

SCREW-IN FOUNDATION NOTES

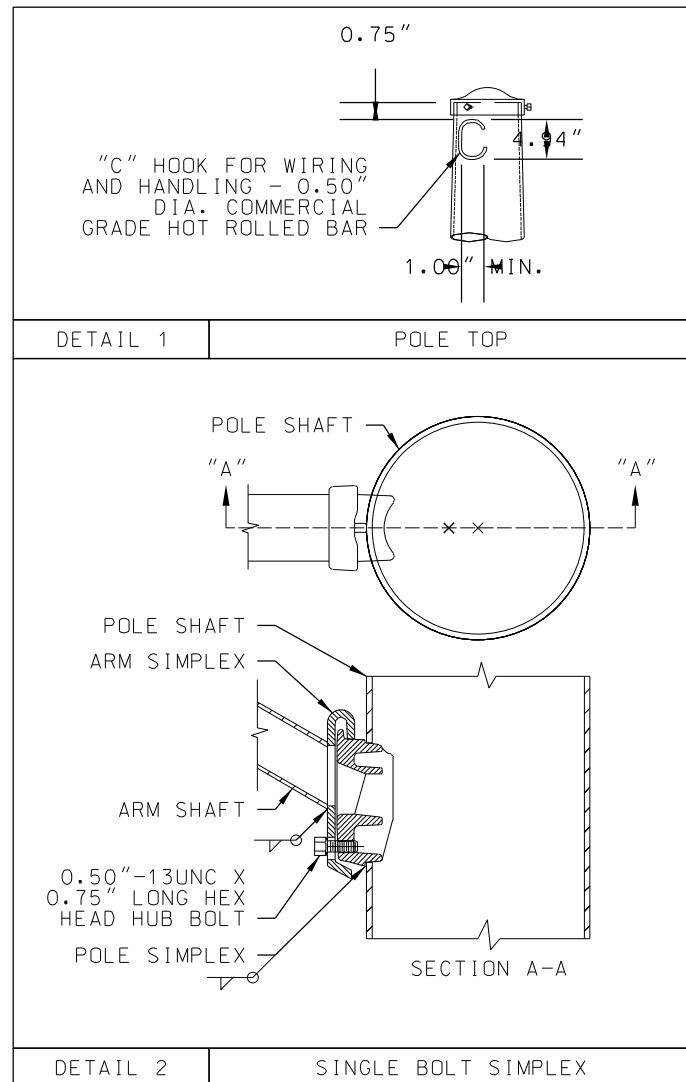
- FINISH:** HOT DIP GALVANIZE PER ASTM-A153 (LATEST REVISION).
- BASEPLATE** TO BE PERPENDICULAR TO SHAFT AXIS AND HOLE CENTERLINE CONCENTRIC TO SHAFT AXIS.
- STENCIL** MIN. 1/2 IN. LETTERS MANUFACTURER'S NUMBER AFTER GALVANIZING.
- PILOT POINT** AND SHAFT AXES TO BE CONCENTRIC AND IN LINE
- FLAME CUT** SLOT PERPENDICULAR TO THE BASEPLATE.
- PREHEAT, TUMBLEBLAST, HANDGRIND, AND CLEAN** BASEPLATE, HELIX, AND PILOT POINT ON ALL WELDED AREAS.
- FLAMECUT IRREGULARITIES PERMISSIBLE:** (1) VALLEYS NOT TO EXCEED 3/32 IN. BELOW NOMINAL SURFACE LEVEL, (2) PEAKS OR POSITIVE IRREGULARITIES NOT TO EXCEED 1/32 IN. ABOVE NOMINAL SURFACE LEVEL OR INTERSECTIONS OF NOMINAL SURFACES.
- MANUFACTURER** TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
- ALL MATERIAL** IS TO BE NEW, UNUSED AND MILLTRACEABLE MEETING THE FOLLOWING SPECIFICATIONS:

BASEPLATE: ASTM A36-(LATEST REVISION) HOT ROLLED STEEL PLATE, (CONFORM TO AASHTO TECH. BUL. #270)

SHAFT: STEEL PIPE PILES, SEAMLESS OR STRAIGHT WELDED, GRADE-2 PER ASTM A252. ALT. MATERIAL: STEEL PIPE TYPE E OR S, GRADE-B PER ASTM A53.

HELIX: ASTM A635 (LATEST REVISION) HOT ROLLED STEEL.
PILOT POINT: ASTM A575 (LATEST REVISION) STEEL BAR.
BOLTS: CARR BOLT PER ANSI B-18.2.1,SAE J429 GRADE-5.

- BASEPLATE** IS PERMANENTLY STAMPED WITH MANUFACTURER'S IDENTIFICATION "ABC" IN 1/2" LETTERS AND DATE CODE IN 1/4" LETTERS.



SCREW-IN FOUNDATION DETAIL FOR POLE TYPE 'D' 35 FEET
NOT TO SCALE

REF:	TITLE: Cable Retainer Assy w/ Conductor Guide, for 8.0" Foundation Anchor, Steel, Galv	PART NO.: SP-6205-GLV
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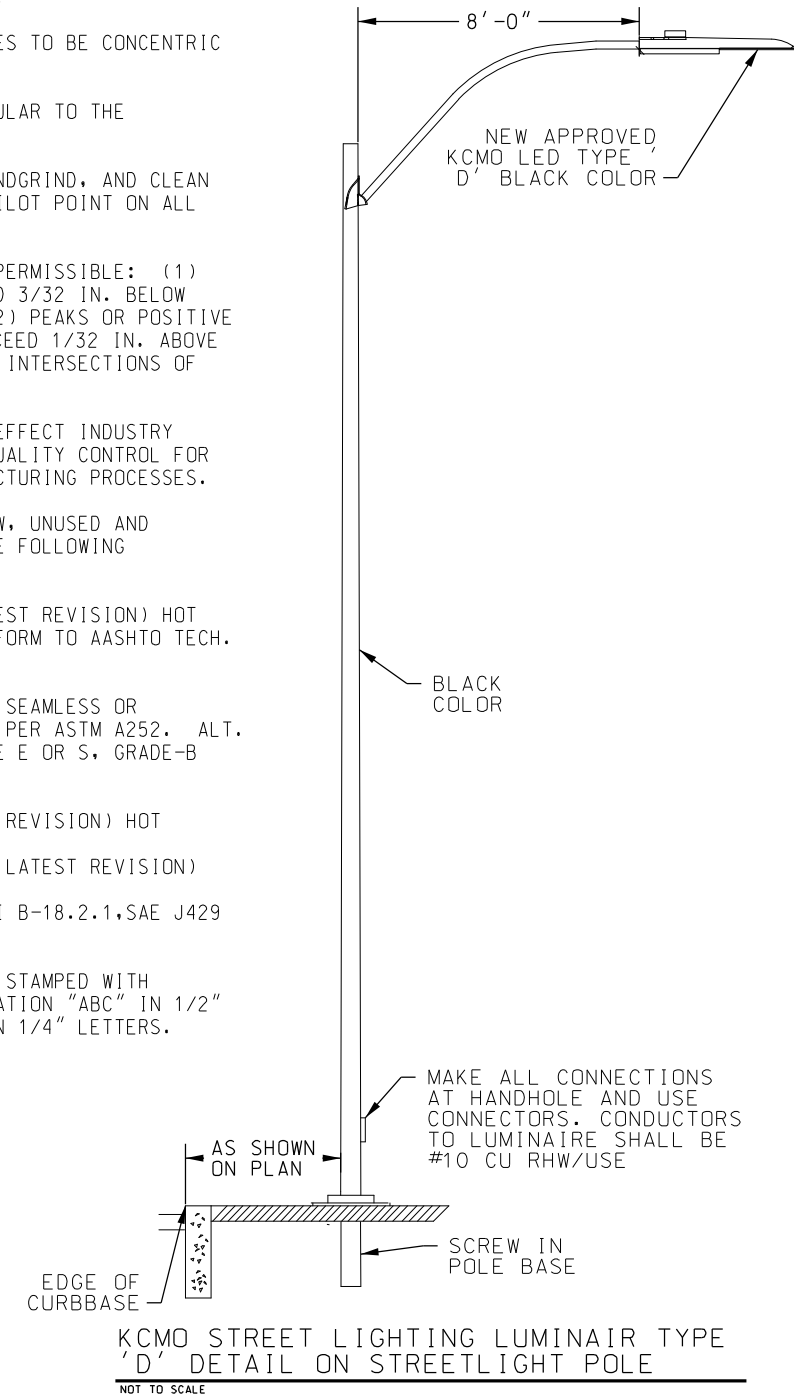
SP-6243-GLV SADDLES
SP-6204-GLV

NOTE: INCLUDE
Z-2057 INSTALLATION
INSTRUCTIONS

ITEM	PART NUMBER	DESCRIPTION	QTY
1	SP-6243-GLV	Weldment, Conductor Guide, 8" Cable Retainer Assy, Steel, Galv	1
2	SP-6199-3-GLV	Bar, Cable Retainer Assembly, Steel	2
3	SP-6199-4	Pad, Cable Retainer, 3/16" Thick, 90 Duro, Red Urethane	4
4	FS-2016-SS	Bolt, Hex Hd Tap, 5/16"-18 x 2-1/4", Type 304 Stainless	4
5	SP-6204-GLV	Weldment, Cable Retainer Assembly, for 8" foundation Anchor, Steel Galvanized	1
6	O-3142	Label, 1" x 2", Cable Retainer	1
7	FS-4101-SS	Washer, Flat, 5/16" x .750" OD, Type 304 Stainless	8
8	FS-4201-SS	Lock Washer, Split, 5/16", Type 304 Stainless	4
9	FS-1001-SS	Nut, Hex 5/16"-18, Type 304 Stainless	4

DRAWN: KERRILL, GROUP DATE: 4/8/2009	CHKD: RWOODS DATE: 4/8/2009	REF: GAB 2/2/10 GMB	REV: KAK DATE: 9/23/2010	SHEET 1 OF 1
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CABLE RETAINER ASSEMBLY FOR 8" FOUNDATION ANCHOR FOR POLE TYPE 'D' 35 FEET
NOT TO SCALE



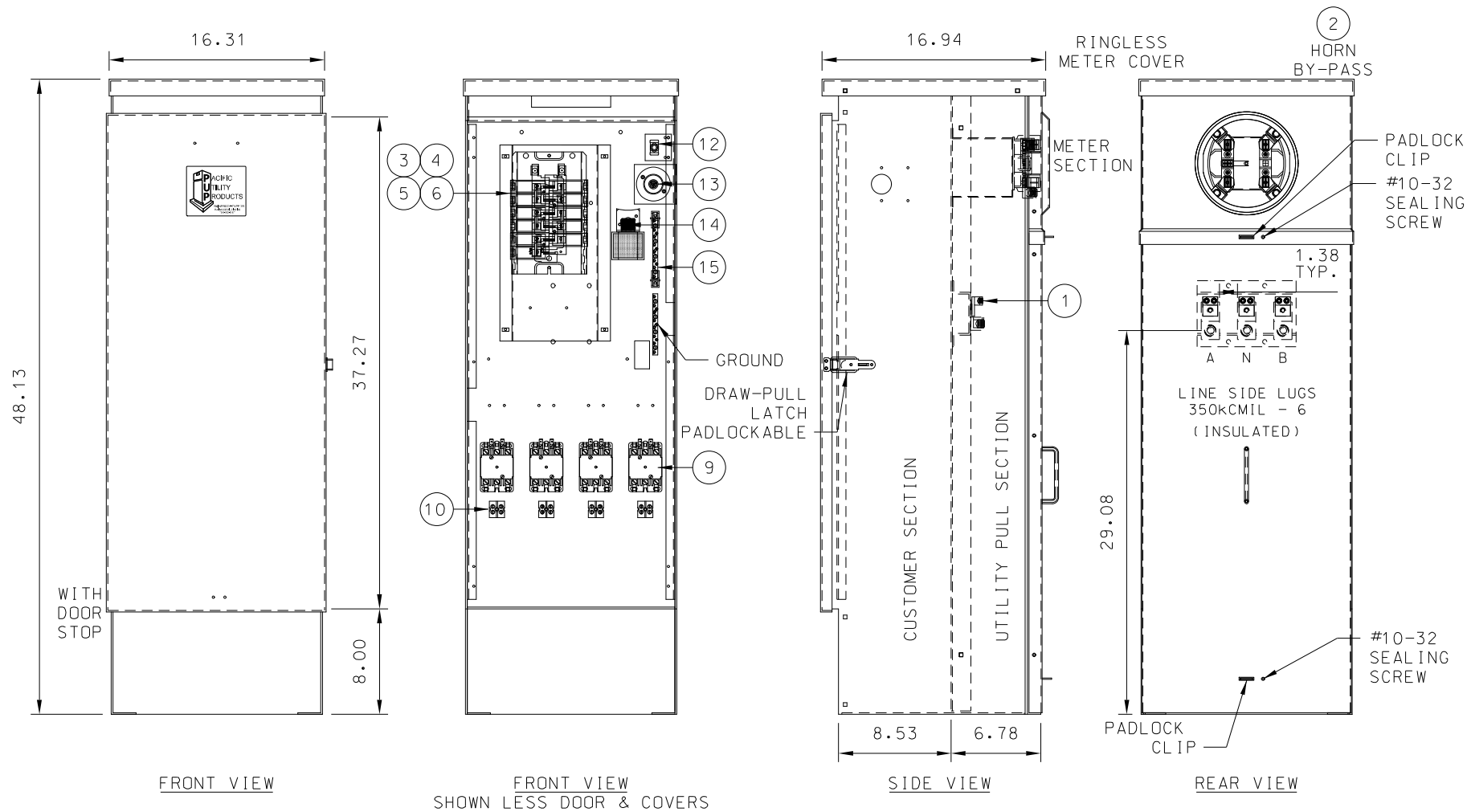
1 COMBINED NEW OCS POLE WITH NEW KCMO LED STREETLIGHT TYPE 'C' FOR OAK STREET
NOT TO SCALE

REV	DATE	DESCRIPTION	DESIGNED BY	AAS
			CHECKED BY	CKB
			DRAWN BY	RAL
			CHECKED BY	CKB
			APPROVED BY	AAS
PLOT DATE: 12/22/2022			DATE	12-23-2022

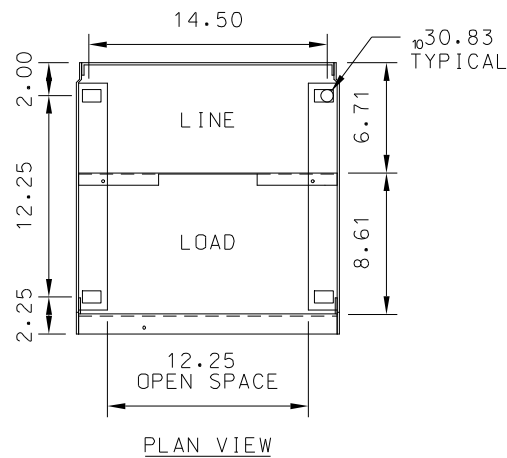


ISSUED FOR BID	DATE: 12-23-2022
 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE
STREET LIGHTING DETAILS		FILENAME: L302.dgn
		CONTRACT NO.: CONTRACT NO. ***
		VOLUME: 1
		DRAWING NO.: SHEET NO.: L302 269

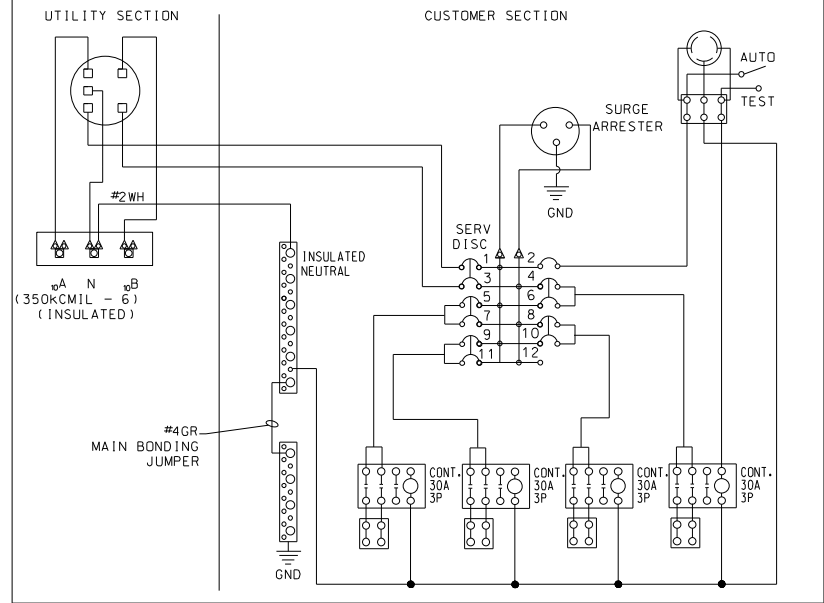


SPECIFICATIONS
* NEMA 3R CONSTRUCTION
* FABRICATED FROM .125 THK NATURAL ALUMINUM
* FACTORY WIRING 600 VOLT RATED COPPER
* ALL EXTERIOR HINGES CONTINUOUS PIANO TYPE
* ALL COMPONENTS ARE U.L. LISTED.



FOUR CIRCUIT STREET LIGHTING CONTROLLER DETAIL FOR LED STREET LIGHT ON TRAFFIC SIGNAL POLE
1 NOT TO SCALE

COMPONENT DIRECTORY
CAT. NO. USP16R-M2100-112C-KCMD
No. 120/240 VAC 1-PHASE 3-WIRE
1 LANDING LUGS 350kCMIL-6 PER PH
2 MTR SOCKET 200A 4J WITH 5TH CLIP
3 MAIN CB 100A 2P 120/240VAC 10KAIC
4 LOAD CENTER 125A 12CKT 1-PHASE
5 (4) CB 30A 2P 120/240VAC 10KAIC
6 (1) CB 15A 1P 120/240VAC 10KAIC
7
8
9 (4) CONTACTOR EH 30A ABB #A63-30-120
10 (4) TERM BLK 2P 85A MARATHON OR EQUAL
11
12 SWITCH TOGGLE SPST 20A
13 PE RECEPTACLE
14 (1) SURGE ARRESTER GE OR EQUAL
15 INSULATED NEUTRAL BUS



FOUR CIRCUIT STREET LIGHTING CONTROLLER WIRING CONTROL DETAIL FOR LED STREET LIGHT ON TRAFFIC SIGNAL POLE
2 NOT TO SCALE

NO.	AMP.	POLE	DESCRIPTION
1-3	100	2	SERVICE DISCONNECT
5-7	30	2	LIGHTING
9-11	30	2	LIGHTING
2	15	1	PE CONTROL
4-6	30	2	LIGHTING
8-10	30	2	LIGHTING

*** TORQUE INFORMATION
□ 350MCM - 6 CU/AL 325 IN.LB.
△ #14-1/0 CU/AL 50 IN.LB.
*** NEUTRAL & EQUIPMENT GROUND-SINGLE CONDUCTOR
○ #3-1/0 50 IN.LB.
#6-4 45 IN.LB.
#8 40 IN.LB.
#14-10 25 IN.LB.
#6 35 IN.LB.
#8 25 IN.LB.
#14-10 20 IN.LB.
*** EQUIPMENT GROUND-MULTIPLE CONDUCTOR
○ (2 OR 3) #10,12,14 CU/AL 45 IN.LB.
+ (2) #12,14 CU/AL 20 IN.LB.
*** FIELD INSTALLED DEVICES-TORQUE TO VALUES INDICATED ON OR WITH DEVICE

PACIFIC UTILITY PRODUCTS
2950 E. PHILADELPHIA ST. ONTARIO CA 91761

INDUSTRIAL CONTROL - RAINPROOF / OUTDOOR TYPE 3R
SUITABLE FOR USE AS SERVICE EQUIPMENT
BONDED NEUTRAL REMOVE BONDING MEANS FOR TEST PURPOSES ONLY

CAT.NO. USP16R-M2100-112C-KDDT-MOD
120/240VAC 1-PHASE 60HZ 3-WIRE 100 AMPS

SHORT CIRCUIT RATING: 10,000 RMS SYMMETRICAL AMPS @ 240 VAC MAX. HOWEVER, THIS SHORT CIRCUIT RATING IS LIMITED TO THE LOWEST INTERRUPTING CAPACITY ON ANY DEVICE INSTALLED.

*MAIN SERVICE DISCONNECT:100 AMPS CUTLER-HAMMER TYPE BR, BRH.

*CIRCUIT BREAKERS 90 AMPS OR LESS: CUTLER-HAMMER TYPE BR, BRH, BD, BQ, GFCB. REPLACEMENT BREAKER(S) MUST BE SAME TYPE AND RATING.

*AUTOMATIC TRIP IS INDICATED BY HANDLE POSITION MIDWAY BETWEEN (ON) AND (OFF). TO RESTORE POWER MOVE HANDLE TO (OFF), THEN (ON).

*METER SOCKET: DURHAM, 200 AMPS CONTINUOUS.

*LOAD CENTER IS SUITABLE FOR USE WITH 60/75 DEGREE C COPPER OR ALUMINUM WIRE.

*LOAD CENTER IS LIMITED TO A MAXIMUM OF 12 INSTALLED CIRCUITS THAT UTILIZE A NEUTRAL CONNECTION, EITHER SINGLE POLE, MULTI-POLE, OR A COMBINATION OF EACH.

*SHIPPING TENDS TO LOOSEN ELECTRICAL CONNECTIONS - TIGHTEN ALL CONNECTIONS BEFORE ENERGIZING UNIT.

REV	DATE	DESCRIPTION	DESIGNED BY	AAS
			CHECKED BY	CKB
			DRAWN BY	RAL
			CHECKED BY	CKB
			APPROVED BY	AAS
PLOT DATE: 12/22/2022			2:08:03 PM	DATE 12-23-2022

ISSUED FOR BID

DATE: 12-23-2022

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

POWER AND LIGHTING DETAILS

SCALE FOR 22"x34":
NOT TO SCALE

FILENAME:
L303.dgn

CONTRACT NO.:
CONTRACT NO. ***

VOLUME:
1

DRAWING NO.: SHEET NO.:
L303 270

DRAWING #	FIXTURE TYPE	WATTS	STREET LIGHT #	POLE TYPE	NOTES:
L101	LED-COBRA HEAD	248W	SBC8510	WOOD EVERGY	EXISTING LED COBRA HEAD STREETLIGHT ON WOOD EVERGY POLE TO REMAIN.
L101	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L101	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L101	LED-COBRA HEAD	248W	SBC8509	WOOD EVERGY	EXISTING LED COBRA HEAD STREETLIGHT ON WOOD EVERGY POLE TO REMAIN.
L101	LED-COBRA HEAD	248W	SBC8508	TRAFFIC SIGNAL POLE	EXISTING LED COBRA HEAD STREETLIGHT ON TRAFFIC SIGNAL POLE TO REMAIN.
L101	LED-COBRA HEAD	248W	SBC8507	TRAFFIC SIGNAL POLE	EXISTING LED COBRA HEAD STREETLIGHT ON TRAFFIC SIGNAL POLE TO REMAIN.
L101	LED-COBRA HEAD	248W	SBC8506	TRAFFIC SIGNAL POLE	NEW LED COBRA HEAD STREETLIGHT ON NEW COMBINED OCS/TRAFFIC SIGNAL POLE.
L101	LED-COBRA HEAD	248W	SBC8505	TRAFFIC SIGNAL POLE	NEW LED COBRA HEAD STREETLIGHT ON NEW COMBINED OCS/TRAFFIC SIGNAL POLE.
L101	LED-COBRA HEAD	248W	SBC8514	WOOD EVERGY	EXISTING LED COBRA HEAD STREETLIGHT ON WOOD EVERGY POLE TO REMAIN.
L101	HPS-SHOE BOX	400W	SBC5500	DCS POLE	EXISTING SHOE BOX STREET LIGHT POLE TO BE RELOCATED TO NEW LOCATION.
L101	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L101	LED-COBRA HEAD	400W	SBC8504	DCS POLE	EXISTING LED COBRA HEAD ON OCS POLE TO BE RELOCATED.
L101	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L101	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L101	LED-COBRA HEAD	400W	SBC8502	DCS POLE	EXISTING LED COBRA HEAD STREETLIGHT ON EXISTING OCS POLE TO REMAIN.
L101	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE REMOVED.
L101	LED COBRA HEAD	248W	SBCXXXXX	ALUMINUM	NEW KCMO SGINIFY TYPE D LED LIGHT FIXTURE ON 35' POLE.
L102	HPS-COBRA HEAD	400W	1371	DCS POLE	EXISTING COBRA HEAD STREETLIGHT ON EXISTING OCS POLE TO REMAIN.
L102	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L102	HPS-COBRA HEAD	400W	1410	DCS POLE	EXISTING COBRA HEAD STREETLIGHT ON EXISTING OCS POLE TO BE RELOCATED.
L102	HPS-COBRA HEAD	150W	NO NUMBER	ALUMINUM	EXISTING COBRA HEAD STREETLIGHT ON METAL POLE TO REMAIN.
L102	LED-COBRA HEAD	248W	SBCXXXX	TRAFFIC SIGNAL POLE	NEW KCMO SIGNIFY TYPE D LIGHT FIXTURE ON COMBINED OCS/ TRAFFIC SIGNAL POLE.
L102	LED-COBRA HEAD	248W	SBCXXXX	TRAFFIC SIGNAL POLE	NEW KCMO SIGNIFY TYPE D LIGHT FIXTURE ON TRAFFIC SIGNAL POLE.
L102	LED-COBRA HEAD	248W	SBCXXXX	TRAFFIC SIGNAL POLE	NEW KCMO SIGNIFY TYPE D LIGHT FIXTURE ON TRAFFIC SIGNAL POLE.
L102	HPS-COBRA HEAD	150W	SBC1115	WOOD	EXISTING COBRA HEAD STREETLIGHT ON EVERGY WOOD POLE TO REMAIN.
L102	HPS-COBRA HEAD	150W	SBC1114	WOOD	EXISTING COBRA HEAD STREETLIGHT ON WOOD POLE TO REMAIN.
L102	HPS-COBRA HEAD	150W	SBC1113	WOOD	EXISTING COBRA HEAD STREETLIGHT ON WOOD POLE TO REMAIN.
L102	HPS-SHOE BOX	400W	SBC2509	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L102	HPS-COBRA HEAD	150W	SBC1112	WOOD	EXISTING COBRA HEAD STREETLIGHT ON WOOD POLE TO REMAIN.

DRAWING #	FIXTURE TYPE	WATTS	STREET LIGHT #	POLE TYPE	NOTES:
L103	HPS-COBRA HEAD	150W	SBC1111	WOOD	EXISTING COBRA HEAD STREETLIGHT ON WOOD POLE TO REMAIN.
L103	HPS-SHOE BOX	400W	SBC2508	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L103	HPS-COBRA HEAD	150W	SBC1110	WOOD	EXISTING COBRA HEAD STREETLIGHT ON WOOD POLE TO REMAIN.
L103	HPS-COBRA HEAD	150W	SBC1109	WOOD	EXISTING COBRA HEAD STREETLIGHT ON WOOD POLE TO REMAIN.
L103	HPS-SHOE BOX	400W	SBC2507	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L103	HPS-SHOE BOX	400W	SBC2506	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L104	HPS-SHOE BOX	400W	SBC2505	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L104	HPS-SHOE BOX	400W	SBC2504	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L104	HPS-SHOE BOX	400W	SBC2503	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L105	HPS-SHOE BOX	400W	SBC2502	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L105	HPS-SHOE BOX	400W	SBC2501	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L105	HPS-SHOE BOX	400W	SBC2500	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L106	HPS-SHOE BOX	400W	SBC2113	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L106	HPS-SHOE BOX	400W	SBC2112	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L107	HPS-SHOE BOX	400W	SBC2111	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE ON THE BRIDGE TO REMAIN.
L108	LED-SHOE BOX	254W	N/A	DCS POLE	NEW KCMO AMERICAN ELECTRIC TYPE D LIGHT FIXTURE ON NEW OCS POLE.
L108	LED-SHOE BOX	254W	N/A	DCS POLE	NEW KCMO AMERICAN ELECTRIC TYPE D LIGHT FIXTURE ON NEW OCS POLE.
L108	LED-SHOE BOX	267W	SBC2110	ALUMINUM	EXISTING SHOE BOX LED STREETLIGHT ON METAL POLE TO BE REMOVED.
L108	LED-SHOE BOX	508W	N/A	DCS POLE	NEW TWIN KCMO AMERICAN LED LIGHT FIXTURES TYPE D ON NEW OCS POLE.
L108	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L108	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L108	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED TO NEW LOCATION.
L108	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED TO NEW LOCATION.
L108	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED TO NEW LOCATION.
L108	LED-SHOE BOX	267W	NO NUMBER	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L108	LED-SHOE BOX	254W	SBCXXXX	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN. REPLACE EXISTING CREE LIGHT FIXTURE WITH KCMO AMERICAN ELECTRIC LIGHT FIXTURE TYPE D.

REV	DATE	DESCRIPTION	DESIGNED BY	AAS			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Custom Engineering 12700 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: L304.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: SHEET NO.:
			CHECKED BY	CKB								
			DRAWN BY	RAL								
			CHECKED BY	CKB								
			APPROVED BY	AAS								
PLOT DATE: 12/22/2022			2:08:38 PM		DATE 12-23-2022		NOT FOR CONSTRUCTION		STREET LIGHTING SCHEDULES		L304 271	

DRAWING #	FIXTURE TYPE	WATTS	STREET LIGHT #	POLE TYPE	NOTES:
L109	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L109	LED-SHOE BOX	508W	N/A	DCS POLE	NEW TWIN KCMO AMERICAN ELECTRIC LED LIGHT FIXTURES TYPE D ON NEW OCS POLE.
L109	LED-SHOE BOX	267W	NO NUMBER	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L109	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L109	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L109	LED-SHOE BOX	267W	NO NUMBER	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L109	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L109	LED-SHOE BOX	508W	NEW	DCS POLE	NEW TWIN KCMO AMERICAN ELECTRIC LED LIGHT FIXTURES TYPE D ON NEW OCS POLE.
L109	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L109	LED-SHOE BOX	267W	NO NUMBER	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L109	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L109	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L109	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L110	LED-SHOE BOX	508W	N/A	DCS POLE	NEW TWIN KCMO AMERICAN ELECTRIC LED LIGHT FIXTURES TYPE D ON NEW OCS POLE.
L110	MH-SHOE BOX	267W	PORT016	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L110	MH-SHOE BOX	267W	PORT015	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L110	LED-SHOE BOX	508W	N/A	DCS POLE	NEW TWIN KCMO AMERICAN ELECTRIC LED LIGHT FIXTURES TYPE D ON NEW OCS POLE.
L110	LED-SHOE BOX	267W	N/A	DCS POLE	NEW TWIN LED SHOE BOX LIGHT FIXTURES ON NEW OCS POLE.
L110	MH-SHOE BOX	267W	PORT014	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L110	MH-SHOE BOX	267W	PORT013	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L110	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED

DRAWING #	FIXTURE TYPE	WATTS	STREET LIGHT #	POLE TYPE	NOTES:
L110	MH-SHOE BOX	400W	PORT012	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L110	LED-SHOE BOX	508W	N/A	DCS POLE	NEW TWIN KCMO AMERICAN ELECTRIC LED LIGHT FIXTURES TYPE D ON NEW OCS POLE.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L111	MH-SHOE BOX	400W	PORT011	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	RELOCATED EXISTING PEDESTRIAN LIGHT ON METAL POLE.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO REMAIN.
L111	MH-SHOE BOX	400W	PORT010	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L111	MH-SHOE BOX	400W	PORT009	ALUMINUM	EXISTING TWIN SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L111	MH-SHOE BOX	400W	PORT008	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L111	MH-SHOE BOX	400W	PORT007	ALUMINUM	EXISTING SHOE BOX STREETLIGHT ON METAL POLE TO REMAIN.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L111	PEDESTRIAN LIGHT	150W	N/A	ALUMINUM	EXISTING PEDESTRIAN LIGHT ON METAL POLE TO BE RELOCATED.
L111	LED-SHOE BOX	774W	N/A	DCS POLE	NEW QUAD KCMO AMERICAN ELECTRIC TYPE D AND C LIGHT FIXTURES ON NEW OCS POLE.
L111	LED-SHOE BOX	774W	N/A	DCS POLE	NEW QUAD KCMO AMERICAN ELECTRIC TYPE D AND C LIGHT FIXTURES ON NEW OCS POLE.
L112	LED COBRA HEAD	137W	SBCXXXX	DCS POLE	NEW KCMO SIGNIFY TYPE C LIGHT FIXTURE ON NEW OCS POLE.
L112	LED COBRA HEAD	137W	SBCXXXX	DCS POLE	NEW KCMO SIGNIFY TYPE C LIGHT FIXTURE ON NEW OCS POLE.
L112	LED COBRA HEAD	137W	SBCXXXX	DCS POLE	NEW KCMO SIGNIFY TYPE C LIGHT FIXTURE ON NEW OCS POLE.
L112	COBRA HEAD	400W	N/A	METAL POLE	EXISTING COBRA HEAD LIGHT FIXTURE ON METAL POLE TO BE REMOVED.

REV	DATE	DESCRIPTION

DESIGNED BYAAS

CHECKED BYCKB

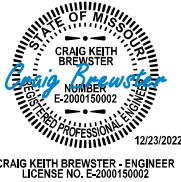
DRAWN BYRAL

CHECKED BYCKB

APPROVED BYAAS

DATE12-23-2022





ISSUED FOR BID

DATE: 12-23-2022



HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856



Custom Engineering
12760 East 40 Highway
Independence, MO 64055
816-350-1473
Certificate of Authority: 000239

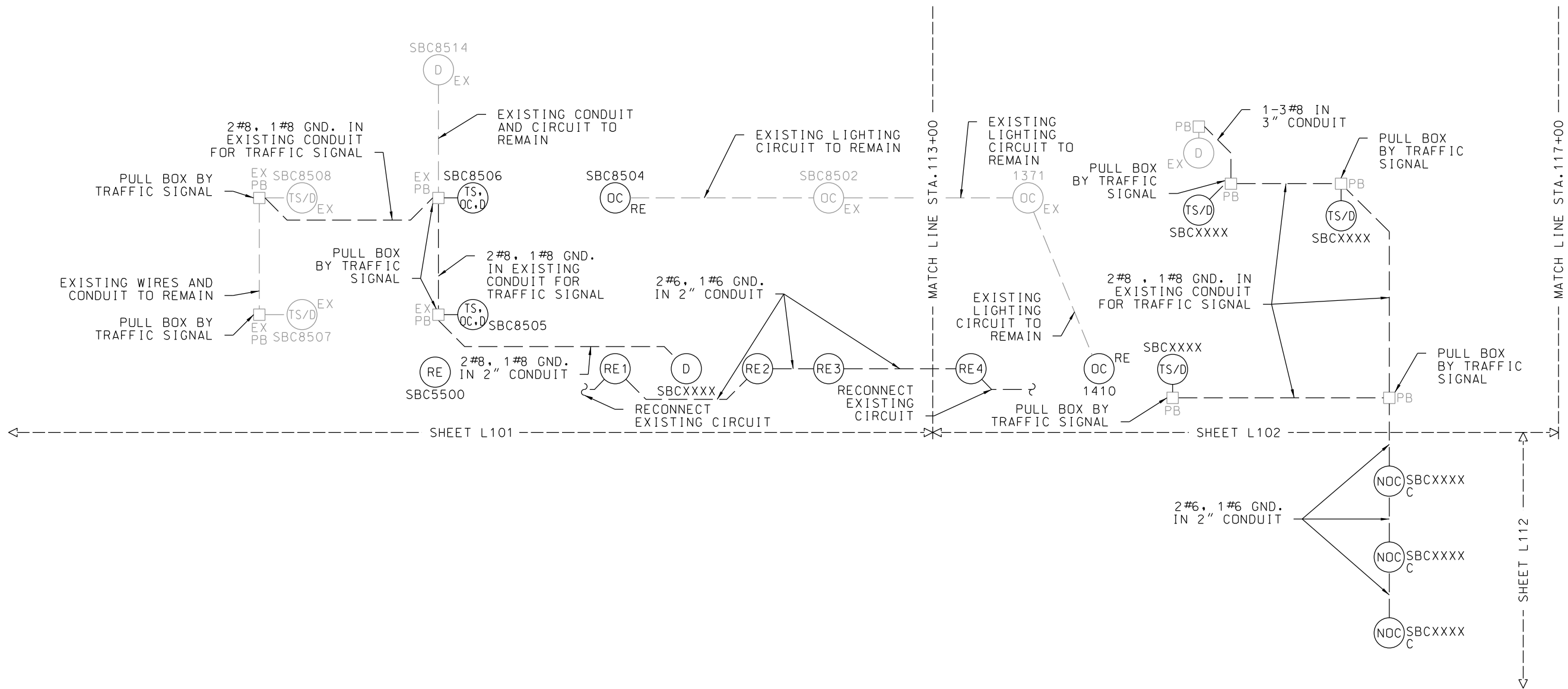
NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

STREET LIGHTING SCHEDULES

SCALE FOR 22"x34":
NOT TO SCALE
FILENAME:
L305.dgn
CONTRACT NO.:
CONTRACT NO. ***
VOLUME:
1
DRAWING NO.: SHEET NO.:
L305272

303104



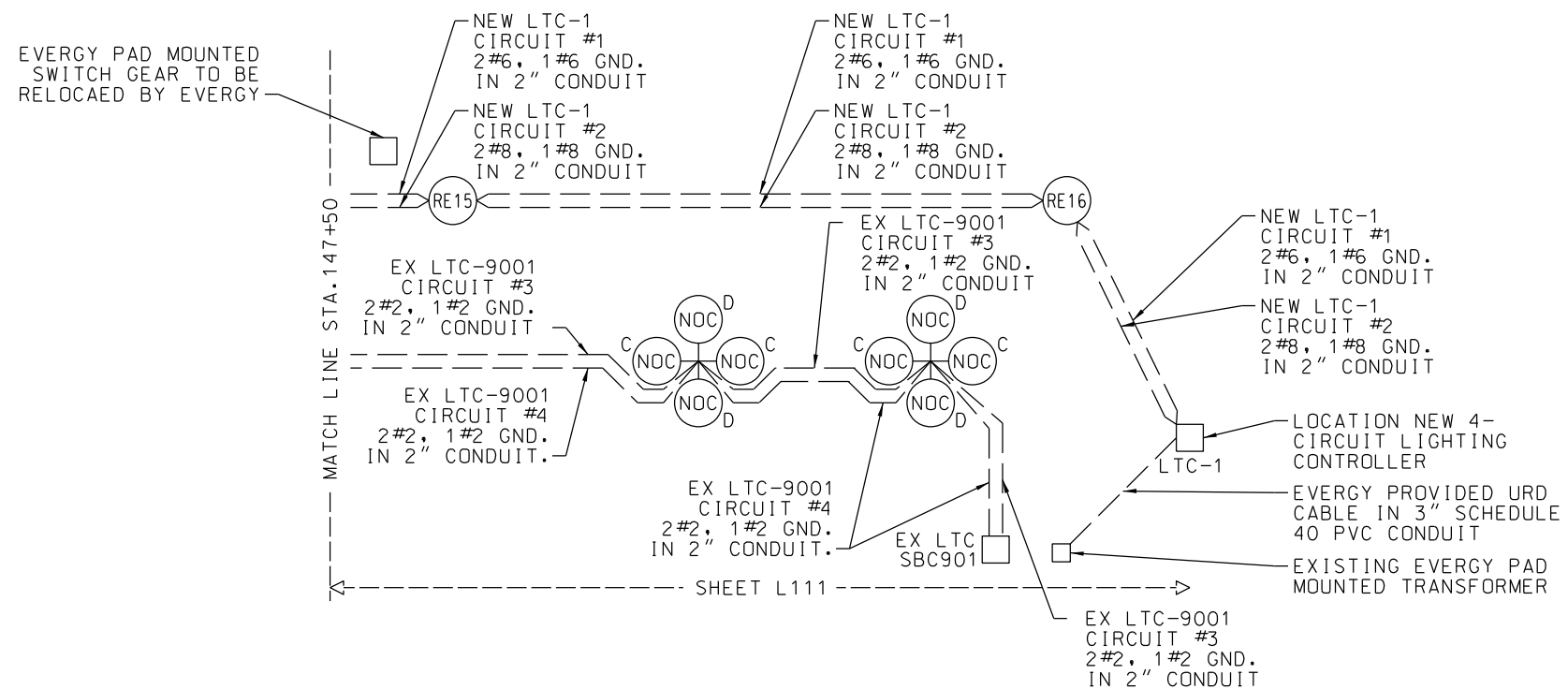
1 WIRING SCHEMATIC DETAIL FOR COMBINED OCS POLE
WITH STREET LIGHTING AND TRAFFIC SIGNAL LIGHT
NOT TO SCALE

CIRCUIT LEGEND

— — — NEW CONDUIT AND CIRCUIT
— — — EXISTING CONDUIT AND CIRCUIT

REFER TO TRAFFIC SIGNAL SHEETS
FOR WIRING OF LED LUMINAIRE
MOUNTED ON TRAFFIC SIGNAL POLE.

REV	DATE	DESCRIPTION	DESIGNED BY	AAS			CRAIG KEITH BREWSTER - ENGINEER LICENSE NO. E-2000150002	ISSUED FOR BID	DATE: 12-23-2022		10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		12760 East 40 Highway Independence, MO 64055 816-350-1473 Certificate of Authority: 000239	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	WIRING SCHEMATIC DETAILS	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	CKB				FILENAME: L306.dgn									
			DRAWN BY	RAL				CONTRACT NO.: CONTRACT NO. ***									
			CHECKED BY	CKB				VOLUME: 1									
			APPROVED BY	AAS				DRAWING NO.: L306	SHEET NO.: 273								
PLOT DATE: 12/22/2022			2:09:02 PM			DATE	12-23-2022	NOT FOR CONSTRUCTION									



— — — NEW CONDUIT AND CIRCUIT
— — — EXISTING CONDUIT AND CIRCUIT

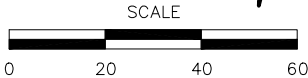
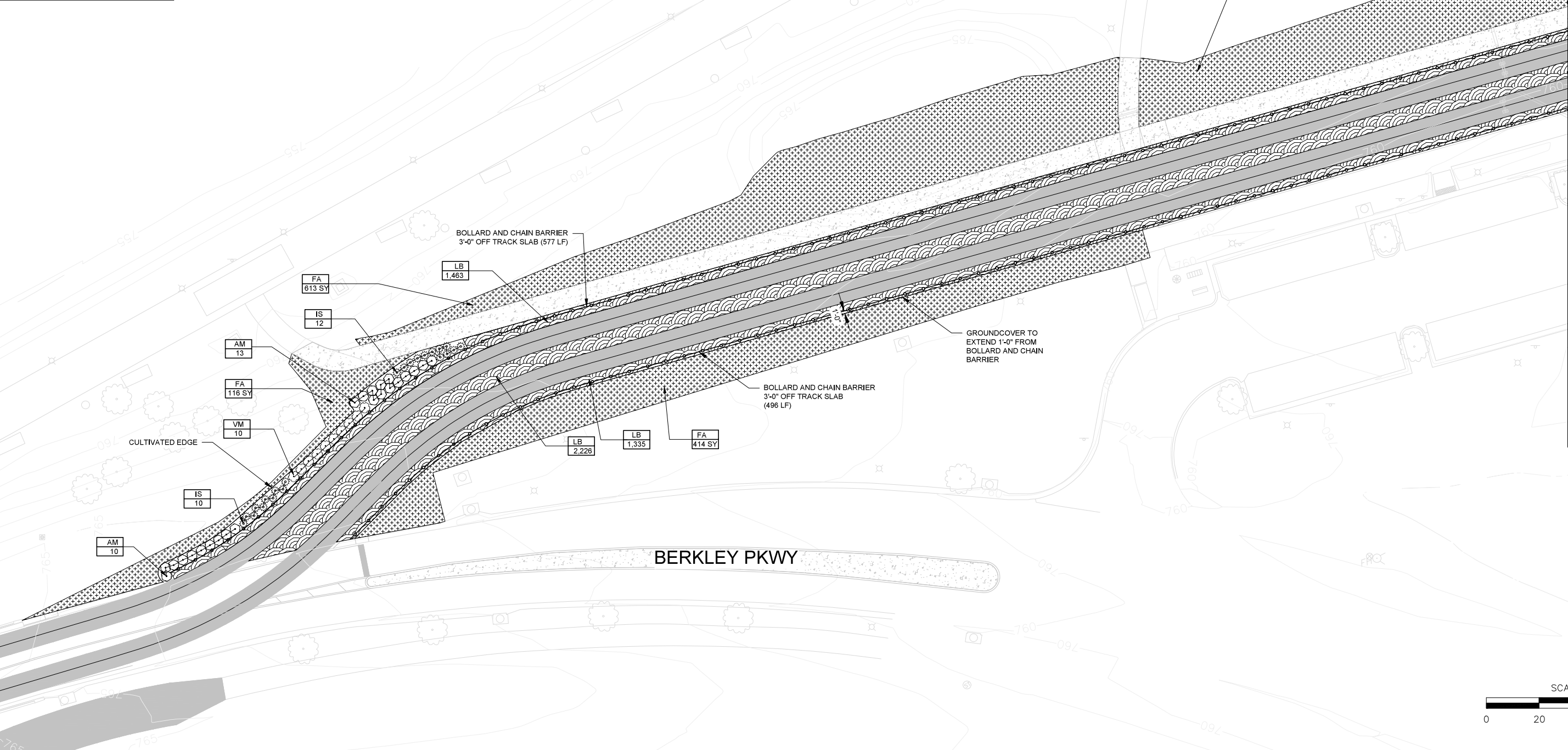
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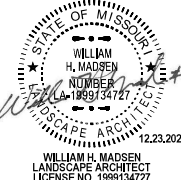
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			CHECKED BY	CKB						FILENAME:		
			DRAWN BY	RAL						10450 Holmes Road Suite 500 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	Custom Engineering 12760 East 40 Highway Independence, MO 64055 816-260-1473 Certificate of Authority: 000239	CONTRACT NO.:
			CHECKED BY	CKB								VOLUME:
			APPROVED BY	AAS								1
												DRAWING NO.:
PLOT DATE: 12/22/2022		2:09:02 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		L307		274		

PLANT SCHEDULE LS101			
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME
AM	23	ARONIA MELANOCARPA 'MORTON' TM	IROQUOIS BEAUTY BLACK CHOKEBERRY
IS	22	ITEA VIRGINICA 'SPRICH' TM	LITTLE HENRY SWEETSPIRE
VM	10	VIBURNUM CARLESII 'SMVCB' TM	SPICE BABY KOREANSPICE VIBURNUM
PERENNIAL AREAS	QTY	BOTANICAL NAME	COMMON NAME
LB	5,024	LIRIOPE MUSCARI 'BIG BLUE'	BIG BLUE LILYTURF
SOD/SEED	QTY	BOTANICAL NAME	COMMON NAME
FA	1548 SY	FESTUCA ARUNDINACEA	TALL FESCUE

NOTE:
1) SEE SHEET LS201 FOR
LANDSCAPE GENERAL NOTES

QUANTITY SUMMARY:	
BOLLARD AND CHAIN BARRIER: 1073 LF	
TOPSOIL: 258 CY	

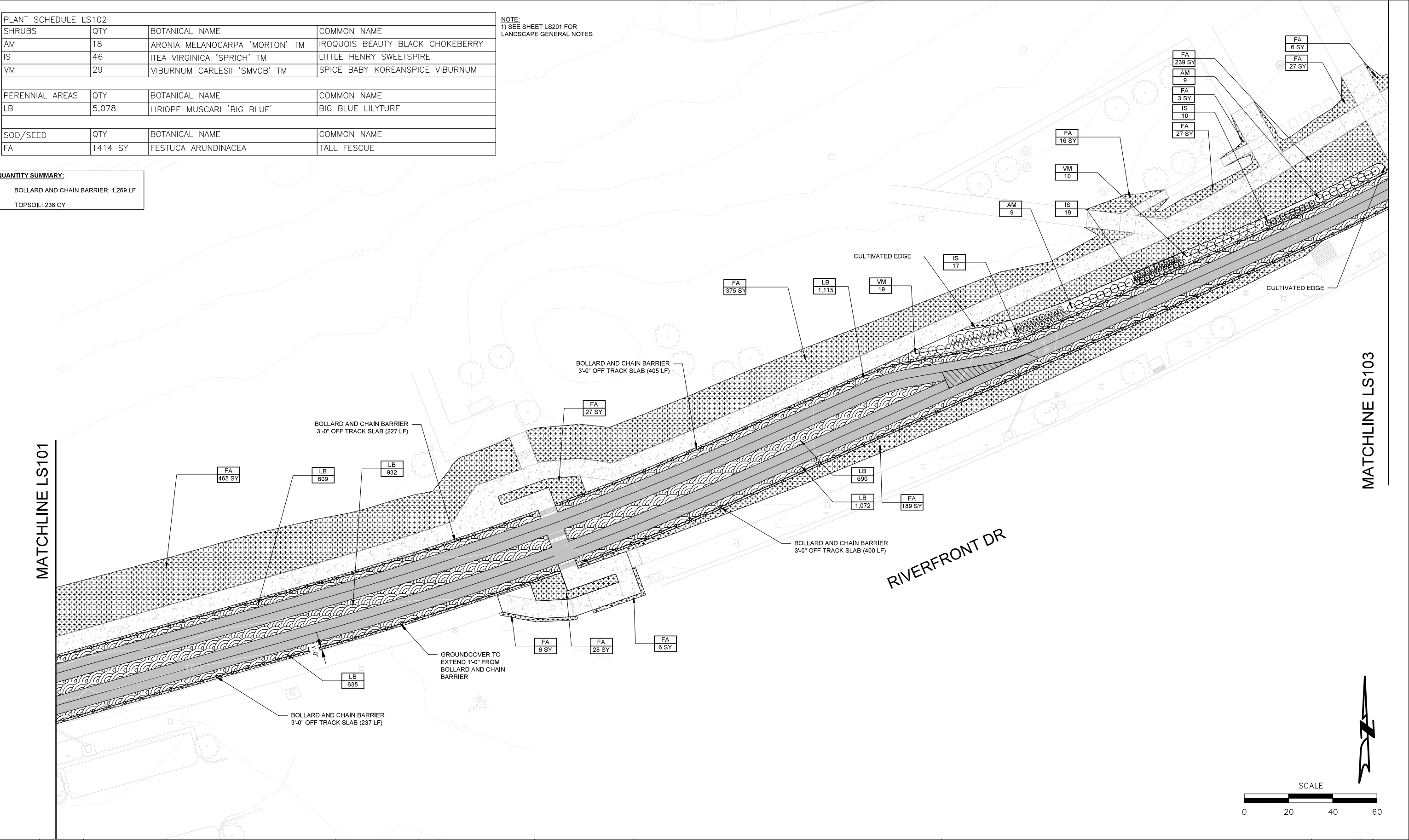


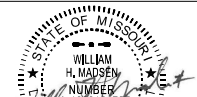
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			CHECKED BY	WHM			 HDR Engineering, Inc.		 The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270				LANDSCAPE PLAN BERKLEY PARK - 1		FILENAME: 79668_RFE_LandscapeSheets.dwg LS101		
			DRAWN BY	AAB											CONTRACT NO. ###		
			CHECKED BY	WHM											CONTRACT NO. ###		
			APPROVED BY	CJH											VOLUME: 1		
PLOT DATE: 12/23/2022			10: 12: 50 AM				DATE	12/23/2022		NOT FOR CONSTRUCTION					DRAWING NO.: SHEET NO.: LS101 275		

PLANT SCHEDULE LS102			
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME
AM	18	ARONIA MELANOCARPA 'MORTON' TM	IROQUOIS BEAUTY BLACK CHOKEBERRY
IS	46	ITEA VIRGINICA 'SPRICH' TM	LITTLE HENRY SWEETSPIRE
VM	29	VIBURNUM CARLESII 'SMVCB' TM	SPICE BABY KOREANSPICE VIBURNUM
PERENNIAL AREAS	QTY	BOTANICAL NAME	COMMON NAME
LB	5,078	LIRIOPE MUSCARI 'BIG BLUE'	BIG BLUE LILYTURF
SOD/SEED	QTY	BOTANICAL NAME	COMMON NAME
FA	1414 SY	FESTUCA ARUNDINACEA	TALL FESCUE

NOTE:
1) SEE SHEET LS201 FOR
LANDSCAPE GENERAL NOTES

QUANTITY SUMMARY:	
BOLLARD AND CHAIN BARRIER:	1,269 LF
TOPSOIL:	236 CY



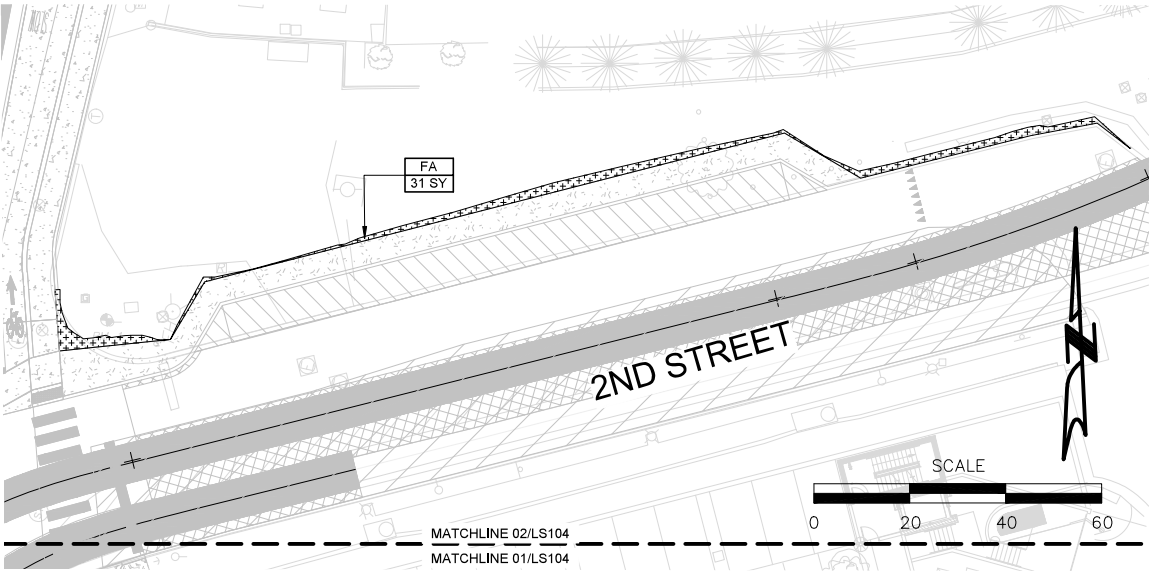
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			CHECKED BY	WHM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64105 816-360-2700 Certificate of Authority: 000856	 The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270			FILENAME: 79608_RFE_LandscapeSheets.dwg
			DRAWN BY	AAB							CONTRACT NO.: LS102
			CHECKED BY	WHM							CONTRACT NO. ###
			APPROVED BY	CJH							VOLUME: 1
PLOT DATE: 12/23/2022			10:12:50 AM		DATE	12/23/2022	NOT FOR CONSTRUCTION		DRAWING NO.: LS102	SHEET NO.: 276	

PLANT SCHEDULE LS104			
SOD/SEED	QTY	BOTANICAL NAME	COMMON NAME
FA	248 SY	FESTUCA ARUNDINACEA	TALL FESCUE

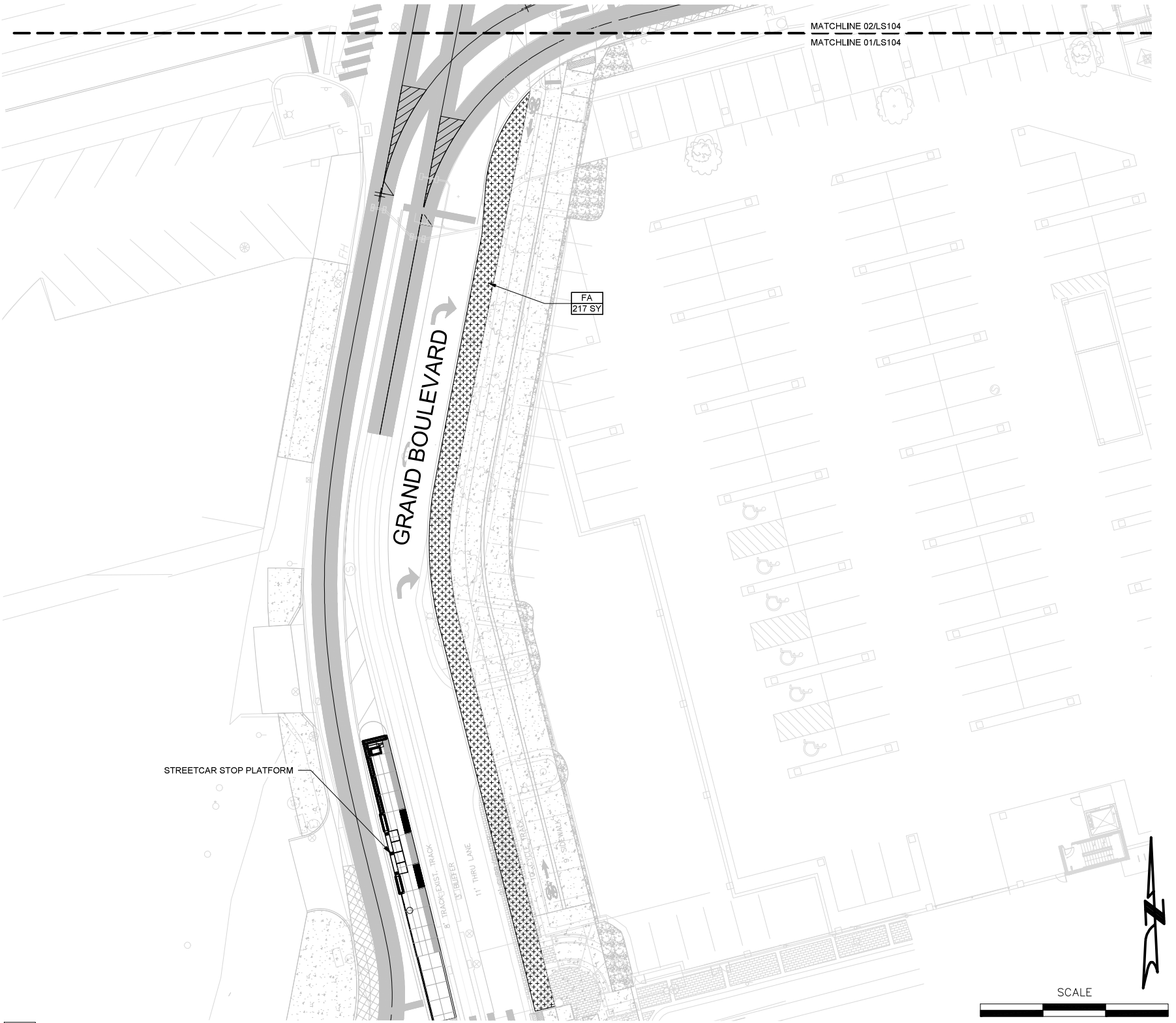
QUANTITY SUMMARY:

TOPSOIL: 41 CY

NOTE:
1) SEE SHEET LS201 FOR
LANDSCAPE GENERAL NOTES



02 LANDSCAPE PLAN - 2ND STREET



01 LANDSCAPE PLAN - GRAND BOULEVARD

REV	DATE	DESCRIPTION	DESIGNED BY	AAB
			CHECKED BY	WHM
			DRAWN BY	AAB
			CHECKED BY	WHM
			APPROVED BY	CJH
PLOT DATE: 12/23/2022		10:12:50 AM	DATE	12/23/2022



ISSUED FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

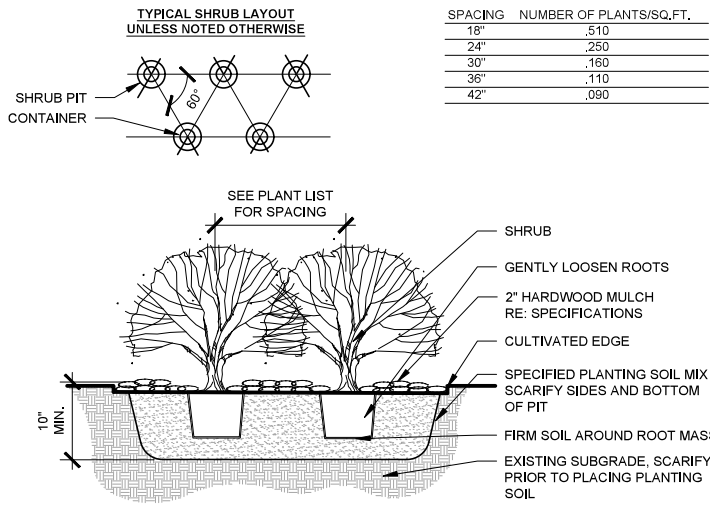
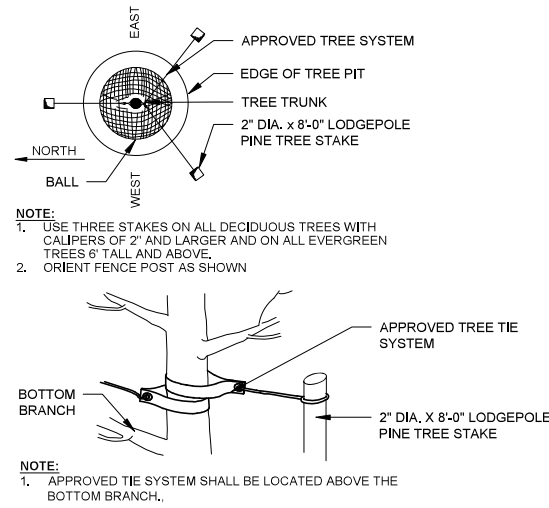
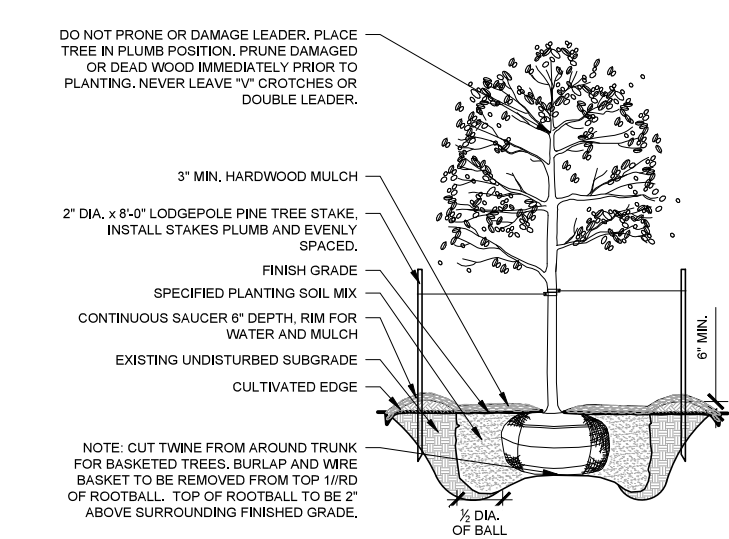
The HNTB Companies
715 Kirk Drive
Kansas City, MO 64105
816-472-1201
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

LANDSCAPE PLAN
GRAND BOULEVARD

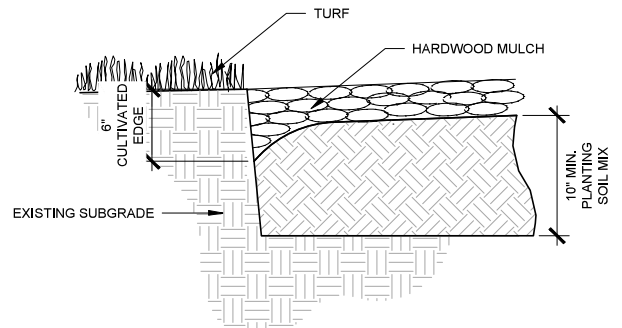
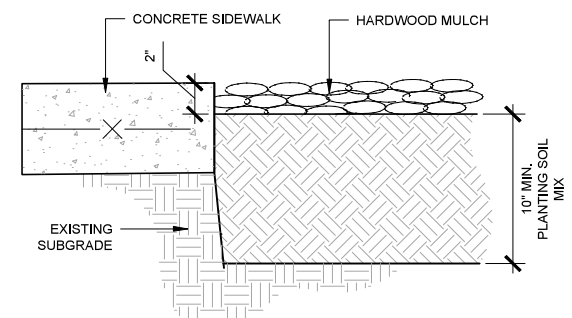
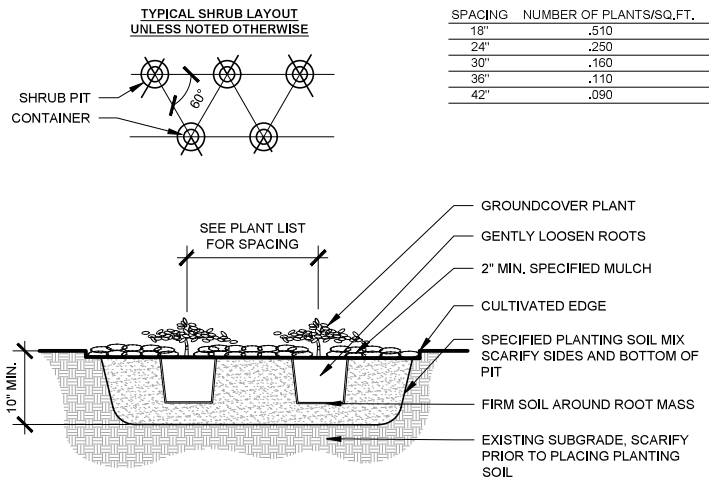
SCALE FOR 22"x34": 1"=20'	
FILENAME: 79668_RFE_LandscapeSheets.dwg	
CONTRACT NO.: LS104	
CONTRACT NO.: ###	
VOLUME: 1	
DRAWING NO.: LS104	SHEET NO.: 278



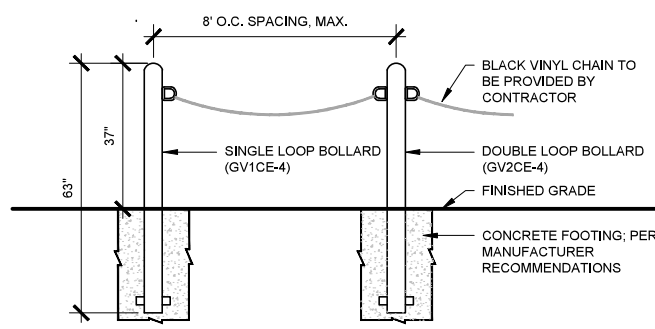
1 TYP. TREE PLANTING
NTS

2 TYP. TREE STAKING
NTS

3 TYP. SHRUB PLANTING
NTS



4 TYP. ORNAMENTAL GRASS/GROUNDCOVER PLANTING
NTS



NOTES:

1. SINGLE AND DOUBLE LOOP BOLLARDS

PRODUCTS: GROVE BOLLARDS GV1CE-4 & GV2CE-4 OR APPROVED EQUAL

MANUFACTURER: KEYSTONE RIDGE DESIGNS

COLOR: MATTE BLACK

WEBSITE: WWW.KEYSTONERIDGEDESIGNS.COM

CONTACT: JUSTIN MASKAL

PHONE: 724.284.1213 EX. 243

CONTRACTOR TO PROVIDE SHOP DRAWINGS AND BOLLARD LAYOUT FOR LANDSCAPE ARCHITECT APPROVAL.

2.

7 POST CHAIN FENCE
NTS

8 PLANT SCHEDULE
NTS

PLANT SCHEDULE								
TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONDITION	SPACING	UNIT	
ZS	6	ZELKOVA SERRATA	ZELKOVA	3" CAL.	B&B	AS SHOWN		
SHRUBS								
	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	UNIT	SPACING
AM	41	ARONIA MELANOCARPA 'MORTON' TM	IROQUOIS BEAUTY BLACK CHOKEBERRY	#5	CONT.			48" o.c.
HA	10	HYDRANGEA ARBORESCENS 'ANNABELLE'	ANNABELLE HYDRANGEA	#5	CONT.			48" o.c.
IS	86	ITEA VIRGINICA 'SPRICH' TM	LITTLE HENRY SWEETSPIRE	#5	CONT.			36" o.c.
VM	39	VIBURNUM CARLESII 'SMVCB' TM	SPICE BABY KOREANSPICE VIBURNUM	#5	CONT.			48" o.c.
EVERGREEN								
	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	UNIT	SPACING
CG	21	CHAENOMELES SPECIOSA 'TEXAS SCARLET'	TEXAS SCARLET FLOWERING QUINCE	#5	CONT.		EA	48" o.c.
GRASSES								
	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	UNIT	SPACING
PS2	8	PANICUM VIRGATUM 'SHENANDOAH'	SHENANDOAH SWITCH GRASS	#1	CONT.			36" o.c.
PERENNIAL AREAS								
	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	UNIT	SPACING
LB	10,451	LIRIOPE MUSCARI 'BIG BLUE'	BIG BLUE LILYTURF	#1	CONT.			15" o.c.
SOD/SEED								
	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	UNIT	SPACING
FA	3487 SY	FESTUCA ARUNDINACEA	TALL FESCUE	SOD			SY	
TOTAL QUANTITY SUMMARY:								
BOLLARD AND CHAIN BARRIER: 3394 LF								
TOPSOIL: 581 CY								

- LANDSCAPE GENERAL NOTES:
- CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL UTILITIES PRIOR TO COMMENCING LANDSCAPE OPERATIONS. NOTIFY THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES.
 - LANDSCAPE CONTRACTOR SHALL VERIFY ALL PLANT QUANTITIES PRIOR TO PLANTING. ANY DISCREPANCIES WITH THE PLAN SHALL BE BROUGHT TO THE OWNER'S REPRESENTATIVE.
 - REFER TO LANDSCAPE PLANT SCHEDULE AND PLANTING DETAILS ON SHEET LS201.
 - PLANTING SHALL BE PER 32 93 00 PLANTS. SOD SHALL BE PER 32 92 23 SODDING.
 - CONTRACTOR SHALL NOT COMMENCE LANDSCAPE WORK UNTIL THE SITE IS FREE OF DEBRIS CAUSED BY ON-GOING CONSTRUCTION OPERATIONS. LANDSCAPE WORK SHALL BEGIN AFTER THE OWNER HAS GIVEN WRITTEN APPROVAL FOR SUCH. THERE SHALL BE NO DEVIATION DUE TO LACK OF COORDINATION FOR THIS ACTIVITY.
 - THE OWNER OR OWNER'S REPRESENTATIVE SHALL APPROVE GRADES AND CONDITION OF THE SITE PRIOR TO THE PLANTING OPERATIONS.
 - CONTRACTOR SHALL LAYOUT ALL PLANT MATERIAL PER THE SPECIFICATIONS.
 - ALL DISTURBED AREAS SHALL BE RE-VEGETATED WITH FESCUE SOD OR APPROVED BY THE LANDSCAPE ARCHITECT.
 - ALL PLANTING BEDS AND TREE DISHS SHALL BE MULCHED PER THE PLANTING DETAILS AND SPECIFICATIONS.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE PLANTS PER SECTION 32 01 90 OPERATION AND MAINTENANCE OF PLANTING.
 - CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE WORK AND PLANT MATERIALS FOR A PERIOD OF TWO YEARS FROM DATE OF ACCEPTANCE OF THE WORK BY THE OWNER.
 - ANY PLANT MATERIAL WHICH DIES DURING THE TWO-YEAR GUARANTEE PERIOD SHALL BE REPLACED BY THE CONTRACTOR DURING THE NEXT NORMAL PLANTING SEASON.
 - PLANT TAGS FOR ALL PLANTS SHALL NOT HAVE PLANT TAGS REMOVED.

ESTIMATED QUANTITIES			
ITEM		SUBSTR.	SUPERSTR. TOTAL
1 3/4" DECK MILLING	SQUARE YD.		4,253 4,253
REMOVAL OF EXISTING STRIP SEAL JOINT & ADJACENT CONCRETE	LUMP SUM		1 1
STRIP SEAL EXPANSION JOINT SYSTEM	LINEAR FEET		65 65
FINGER JOINT MODIFICATIONS	EACH		3 3
3 3/4" OVERLAY	SQUARE YD.		3,879 3,879

GENERAL NOTES:

DESIGN SPECIFICATION:
2002 AASHTO STANDARD BRIDGE DESIGN SPECIFICATIONS, 17TH EDITION
WITH ALL INTERIMS.

CONSTRUCTION AND MATERIALS SPECIFICATIONS:
MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2020 AND
SUPPLEMENTAL SPECIFICATIONS REVISIONS.
STANDARD SPECIFICATIONS AND DESIGN CRITERIA, KANSAS CITY METROPOLITAN
CHAPTER APWA. (APWA SPEC.)
SUPERSTRUCTURE AND SUBSTRUCTURE CONCRETE AND OTHER ITEMS BESIDES
CONCRETE SHALL BE IN ACCORDANCE WITH PROJECT MANUAL.

DESIGN UNIT STRESSES:

CONCRETE (OVERLAY) (SEE PROJECT MANUAL)	f'c = 4,500 psi
CONCRETE (BRIDGE) (SEE PROJECT MANUAL)	f'c = 4,500 psi
REINFORCING STEEL (GRADE 60)	fy = 60,000 psi
STEEL (ASTM A709 GRADE 50)	fy = 50,000 psi

STRIP SEAL EXPANSION JOINT SYSTEM
ELASTOMERIC CONCRETE AND CONCRETE (BRIDGE) USED TO RECONSTRUCT THE STRIP
SEAL SHALL BE SUBSIDIARY TO THE BID ITEM, "STRIP SEAL EXPANSION JOINT
SYSTEM". SEE THE PROJECT MANUAL FOR ELASTOMERIC CONCRETE AND CONCRETE
(BRIDGE) REQUIREMENTS.

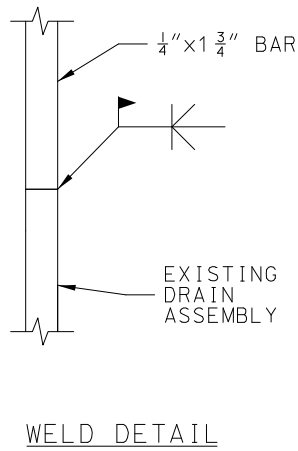
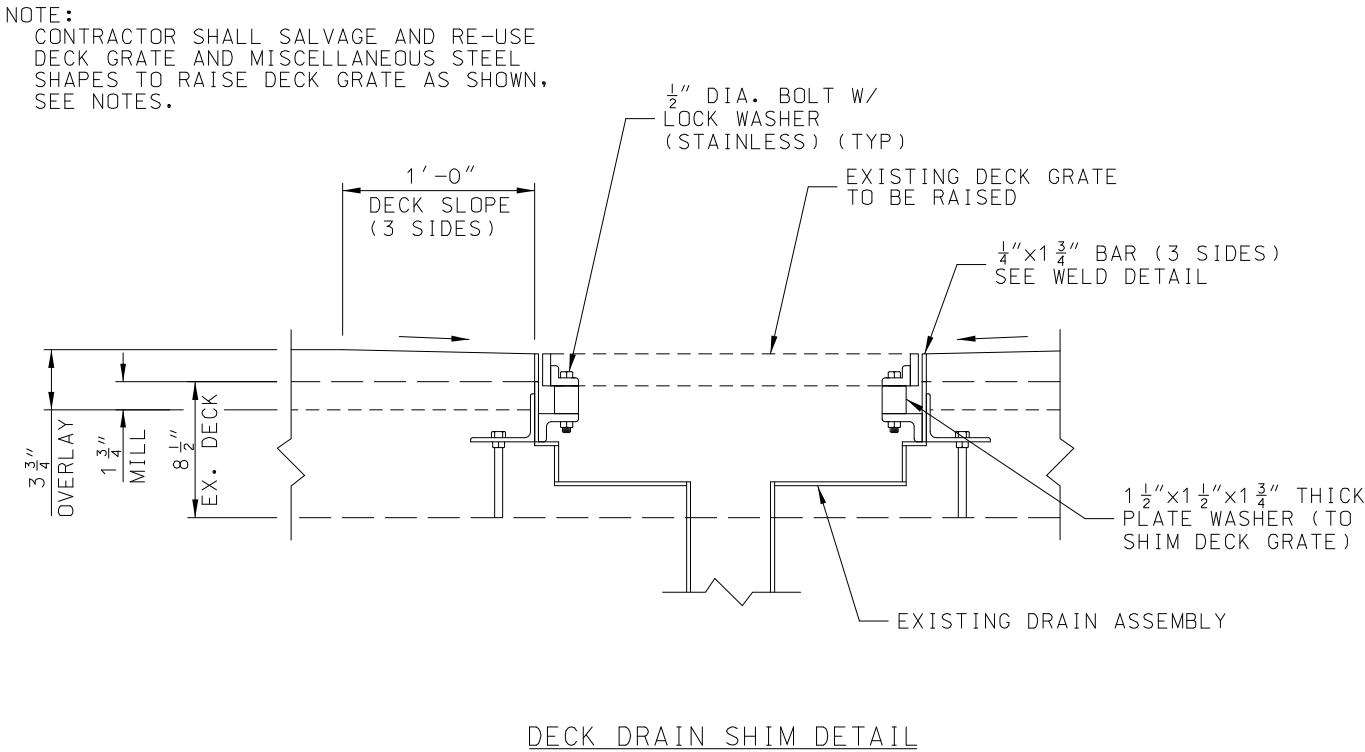
ALL LABOR AND MATERIAL REQUIRED TO REMOVE THE STRIP SEAL EXPANSION JOINTS
AND ADJACENT CONCRETE AS SHOWN ON THE PLANS ARE INCLUDED IN THE BID ITEM
"REMOVAL OF EXISTING STRIP SEAL JOINT & ADJACENT CONCRETE".

ALL LABOR AND MATERIAL REQUIRED TO MODIFY THE FINGER JOINTS AS SHOWN ON
THE PLANS ARE INCLUDED IN THE BID ITEM "FINGER JOINT MODIFICATIONS".

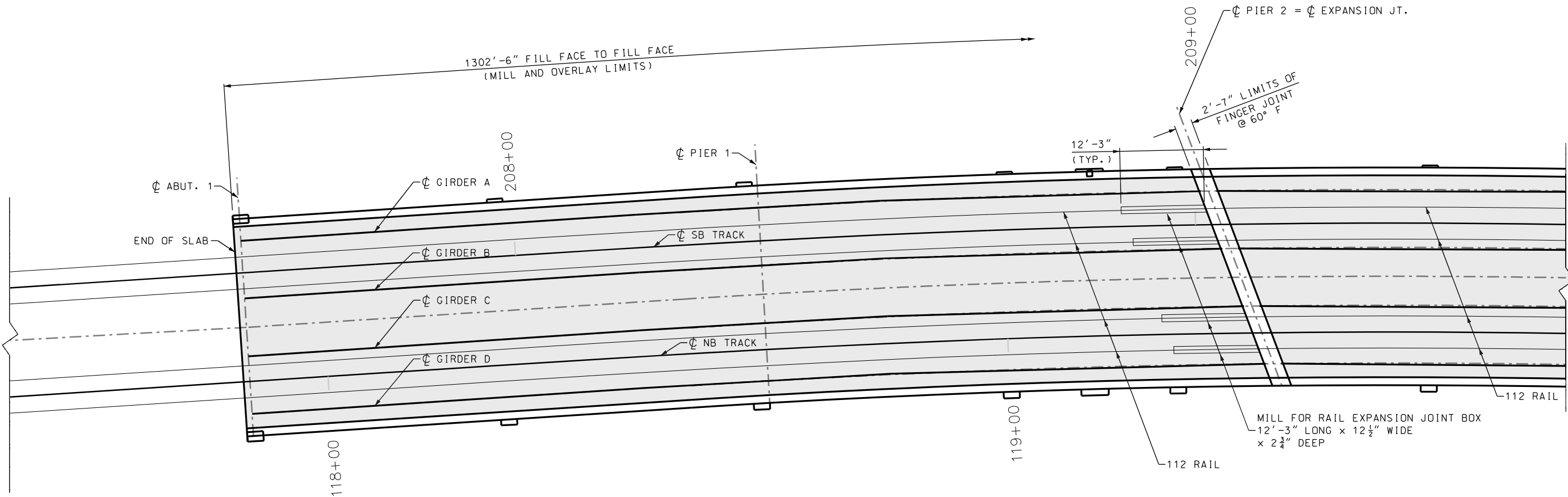
SEE EXISTING PLANS FOR DIMENSIONS AND DETAILS NOT SHOWN.

DECK DRAINS THAT ARE NOT REMOVED:

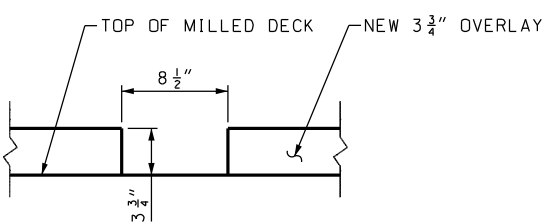
THE DECK DRAINS THAT ARE NOT REMOVED WILL BE SHIMMED UP 2" TO ACCOUNT FOR
THE ADDITIONAL 2" FROM THE NEW 3 3/4" OVERLAY; THE COST FOR THE LABOR AND
MATERIAL REQUIRED TO SHIM UP THE DECK DRAINS IS INCIDENTAL TO THE COST OF
"3 3/4" OVERLAY".



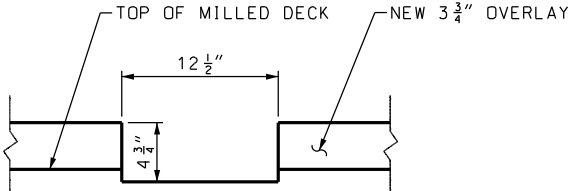
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			CHECKED BY	TH			 HDR Engineering, Inc.		BASE BID - 112TRAM JOINTS GENERAL NOTES			FILENAME: 112_ST100_GenNotes.dgn	
			DRAWN BY	BW/BS			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HC Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873				CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY	TW/TH			NOT FOR CONSTRUCTION					VOLUME: 1	
			APPROVED BY	CDH								DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/22/2022			5:18:58 PM		DATE		12-23-2022					ST100	



PLAN



TYPICAL 8 1/2" x 3 3/4" BLOCKOUT DETAIL FOR OVERLAY
(CENTER BLOCKOUT ON NEW RAIL)



OVERLAY BLOCKOUT DETAIL AT RAIL EXPANSION JOINT BOX
(CENTER BLOCKOUT ON NEW RAIL)

MILLING NOTES

MILL THE EXISTING DECK 1 3/4" DEEP FROM GUTTER TO GUTTER STARTING AT THE END OF SLAB AND STOPPING AT THE EDGE OF THE EXISTING FINGER JOINTS OR STRIP SEAL REPLACEMENT LIMITS. THE MILLING SHALL BE 1" DEEPER AS NOTED FOR THE RAIL EXPANSION JOINT BOX.

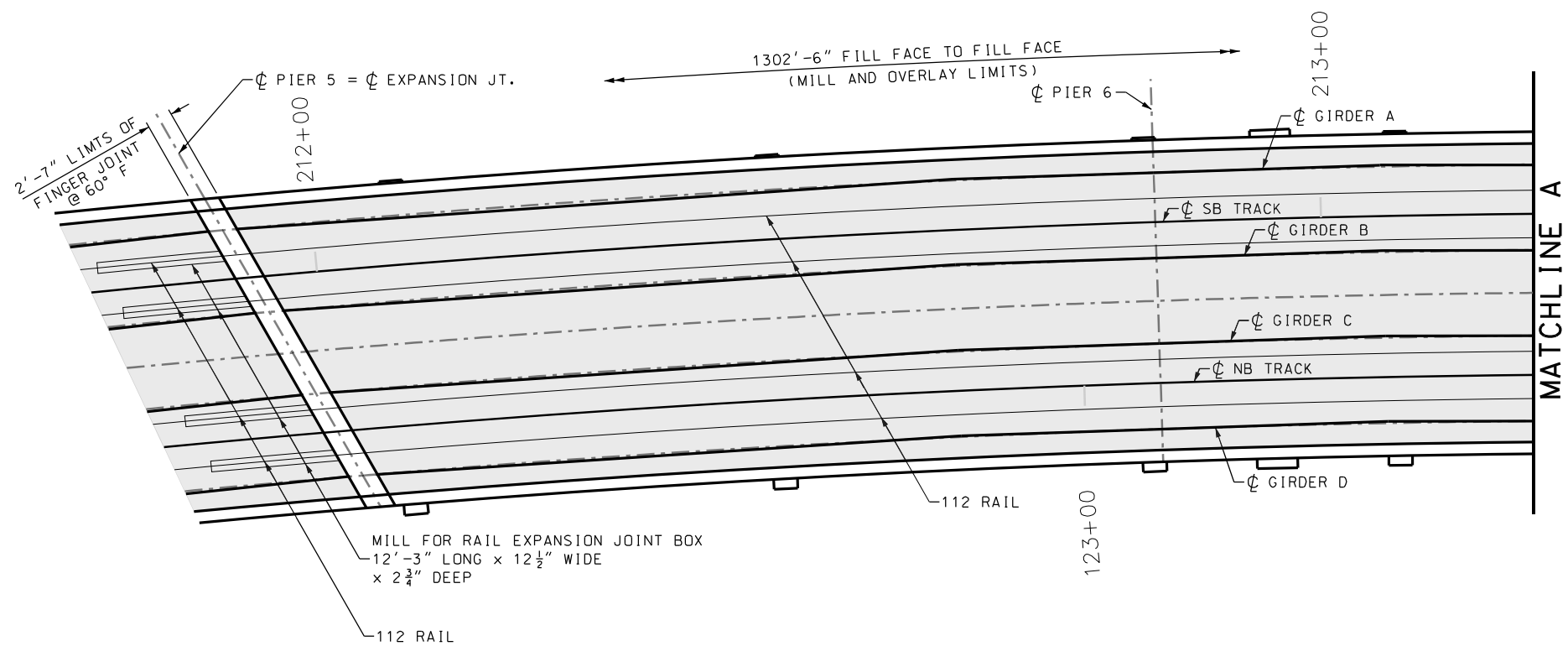
SEE TRACK PLANS K001-K921 FOR ADDITIONAL RAIL JOINT AND TRACK DETAILS.

EXPANSION JOINT DIMENSIONS ARE BASED ON AN AMBIENT TEMPERATURE OF 60° F.

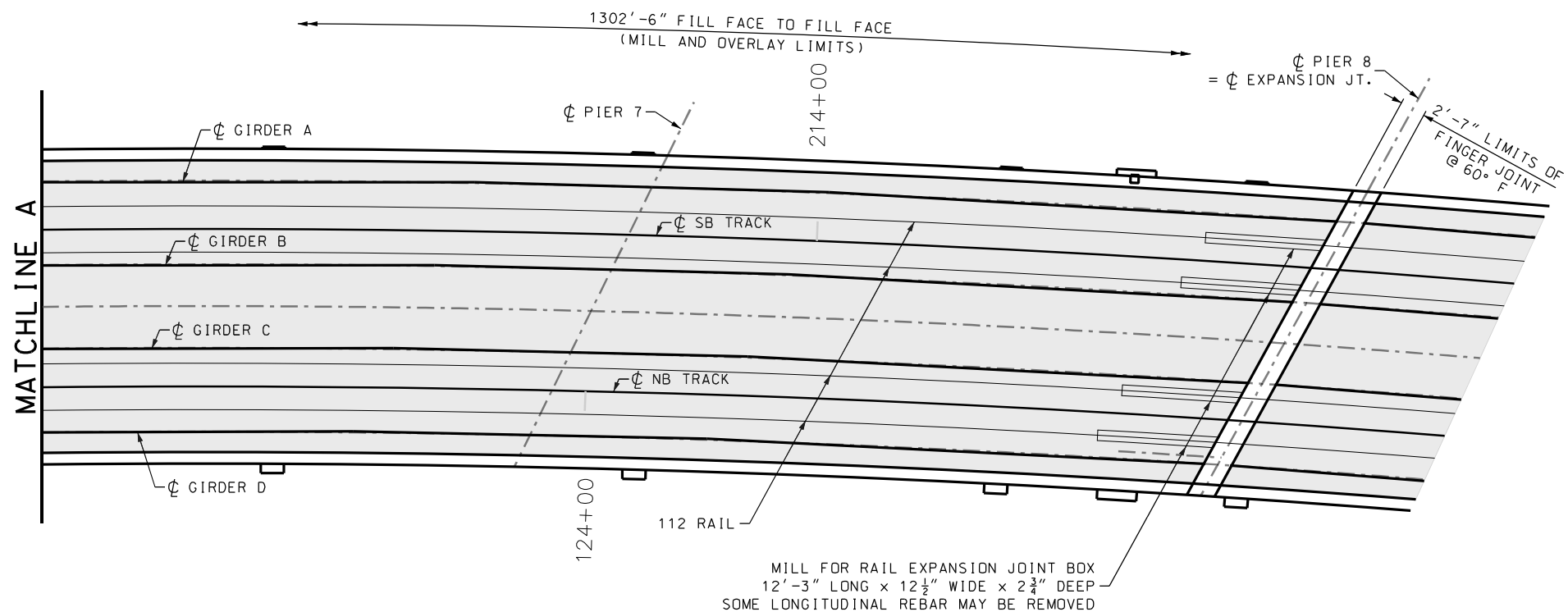
OVERLAY NOTES

THE NEW 3 3/4" OVERLAY WILL EXTEND FROM GUTTER TO GUTTER THE FULL LENGTH OF THE BRIDGE EXCEPT AT THE EXPANSION JOINTS. THE TYPICAL 8 1/2" x 3 3/4" BLOCKOUT WILL BE THE FULL LENGTH OF THE BRIDGE EXCEPT AT THE RAIL EXPANSION BOX LOCATIONS.

REV	DATE	DESCRIPTION	DESIGNED BY	TW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NO SCALE, FOLLOW DIMENSIONS FILENAME: I02-ST101-Unit11-DeckMill_Plan.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1		
			CHECKED BY	TH								
			DRAWN BY	BW/BS			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856					
			CHECKED BY	TW/TH			7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873					
			APPROVED BY	CDH								
PLOT DATE: 12/22/2022			5:19:01 PM		DATE		12-23-2022	NOT FOR CONSTRUCTION			BASED BID - 112TRAM JOINTS DECK MILL AND OVERLAY LIMITS 1 OF 3	
									DRAWING NO.: ST101			
									SHEET NO.: 281			



PLAN
(UNIT 3 SHOWN, OTHER UNITS SIMILAR)

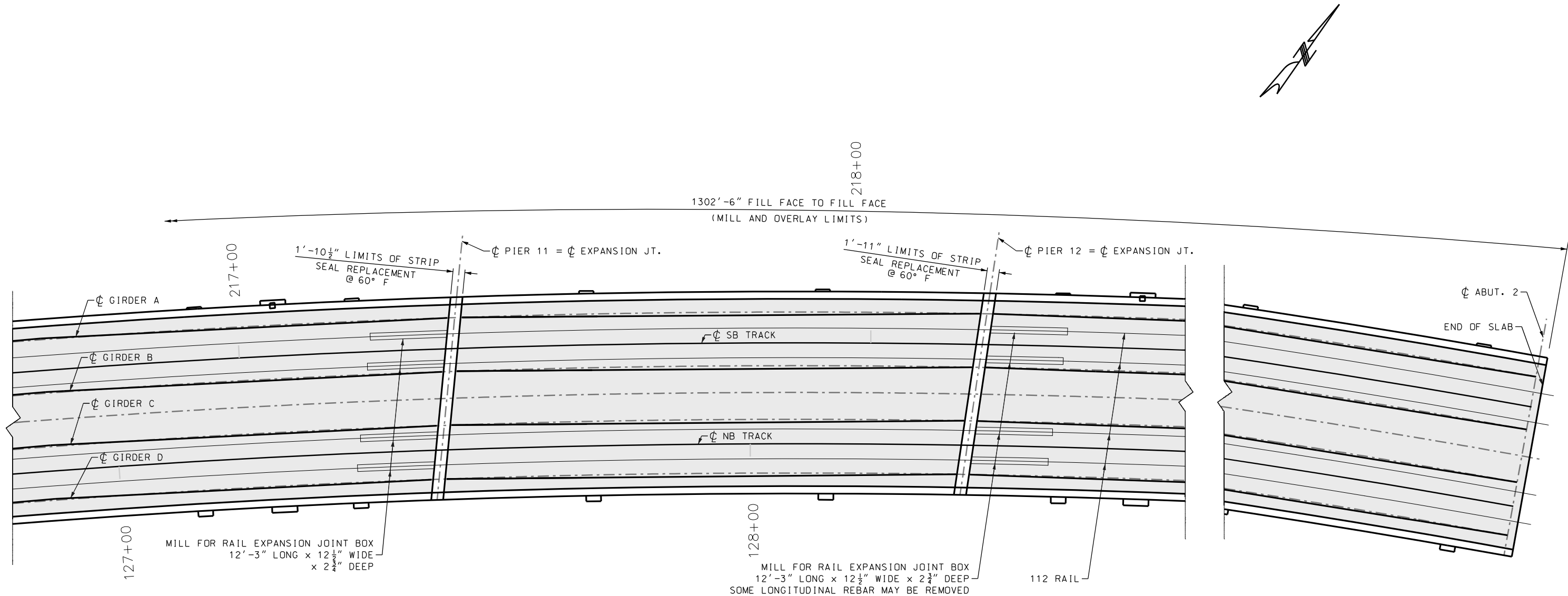


PLAN
(UNIT 3 SHOWN, OTHER UNITS SIMILAR)

NOTES

SEE DECK MILL AND OVERLAY LIMITS 1 OF 3 FOR
NOTES AND DETAILS.

REV	DATE	DESCRIPTION	DESIGNED BY	TW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION BASE BID - 112TRAM JOINTS DECK MILL AND OVERLAY LIMITS 2 OF 3	SCALE FOR 22"x34": NO SCALE, FOLLOW DIMENSIONS	
			CHECKED BY	TH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-1723 Certificate of Authority: 2010005873		FILENAME: 112_ST102_Unit13_DeckMill_Plan.dgn	
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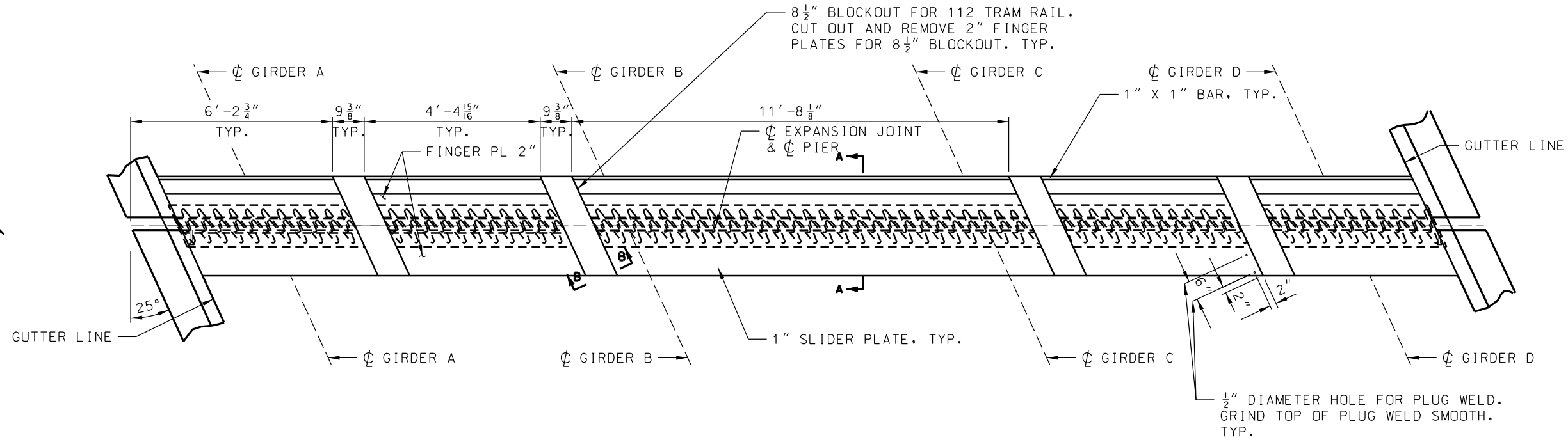


PLAN

NOTES

SEE DECK MILL AND OVERLAY LIMITS 1 OF 3 FOR NOTES AND DETAILS.

REV		DATE	DESCRIPTION	DESIGNED BY	TW	 TERENCE A. HOOD PE-2014030630 PROFESSIONAL ENGINEER	ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NO SCALE, FOLLOW DIMENSIONS	
				CHECKED BY	TH		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		 HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873		FILENAME: I02_ST103.Un1t5_DeckMill.Plan.dgn			
				DRAWN BY	BW/BS						CONTRACT NO.:			
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				APPROVED BY	CDH						VOLUME:			
PLOT DATE: 12/22/2022		5:19:07 PM		DATE	12-23-2022	TERENCE A. HOOD - ENGINEER LICENSE NO. 2014030630		NOT FOR CONSTRUCTION				DRAWING NO.:	SHEET NO.:	
												ST103	283	



PIER 8
PLAN

NOTES:
PLAN DIMENSIONS ARE BASED ON INSTALLATION AT 60°F. THE EXPANSION GAP AND OTHER DIMENSIONS SHALL BE INCREASED OR DECREASED 1/4" FOR EACH 10° FALL OR RISE IN TEMPERATURE AT INSTALLATION.

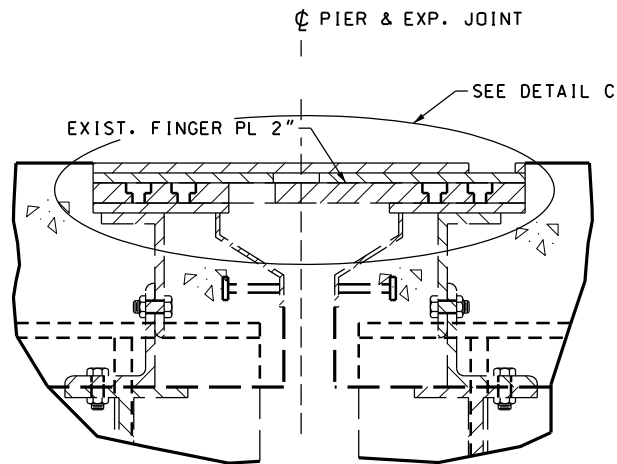
MATERIAL FOR THE EXPANSION DEVICE SHALL BE ASTM A709 GRADE 50 STRUCTURAL STEEL.

STRUCTURAL STEEL FOR THE NEW BAR AND PLATE SHALL BE COATED WITH A MINIMUM OF TWO COATS OF INORGANIC ZINC PRIMER TO PROVIDE A TOTAL DRY FILM THICKNESS OF 4 MILS MINIMUM, 6 MILS MAXIMUM, OR GALVANIZED IN ACCORDANCE WITH ASTM A123.

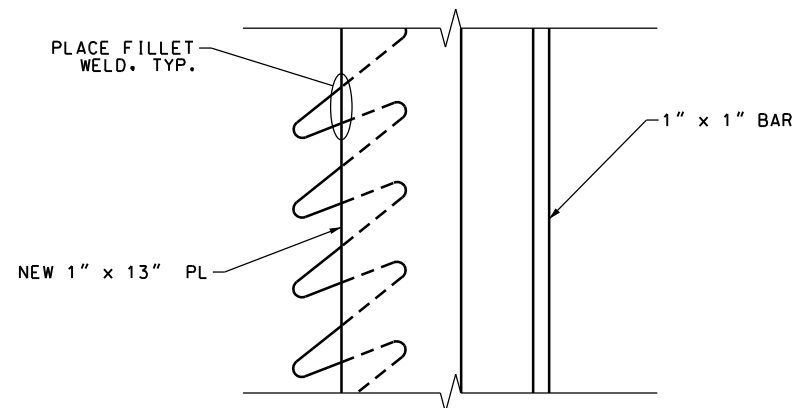
PAYMENT FOR FURNISHING, COATING OR GALVANIZING AND INSTALLING THE STRUCTURAL STEEL FOR THE MODIFICATIONS AND REMOVAL OF THE EXISTING 2" FINGER PLATES WILL BE CONSIDERED COMPLETELY COVERED BY THE CONTRACT UNIT PRICE FOR FINGER JOINT MODIFICATIONS, PER EACH.

NOTES:
FOR SECTIONS A-A & B-B SEE ST106.

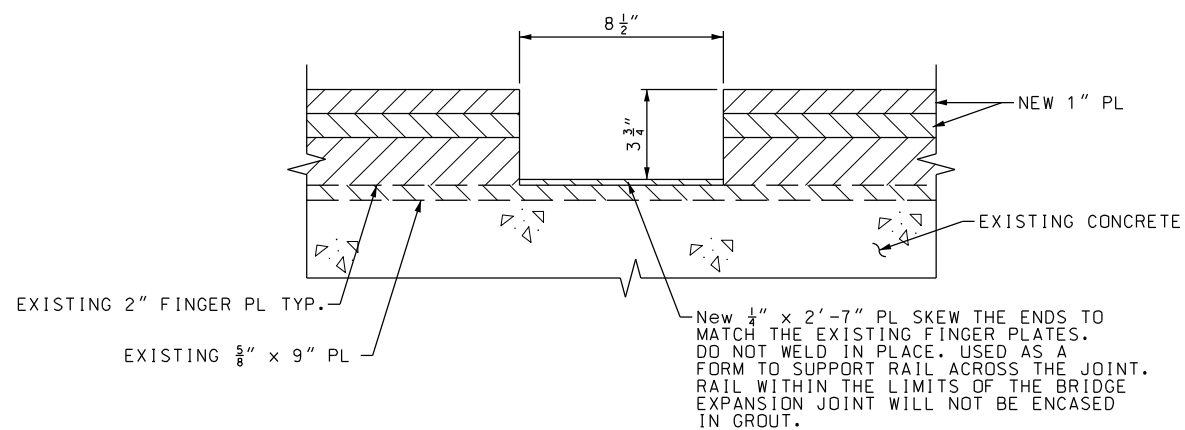
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			CHECKED BY	TH							FILENAME: I02_ST105.FngJtPlan.Pier08.dgn			
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			APPROVED BY	CDH								DRAWING NO.: ST105		
PLOT DATE: 12/22/2022			DATE	12-23-2022	TERENCE A. HOOD - ENGINEER LICENSE NO. 2014030630		10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		H2R HDR Engineering, Inc. 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873		BASE BID - 112TRAM JOINTS MODIFIED FINGER JOINT PLAN PIER 8		SHEET NO.: 285	
NOT FOR CONSTRUCTION														



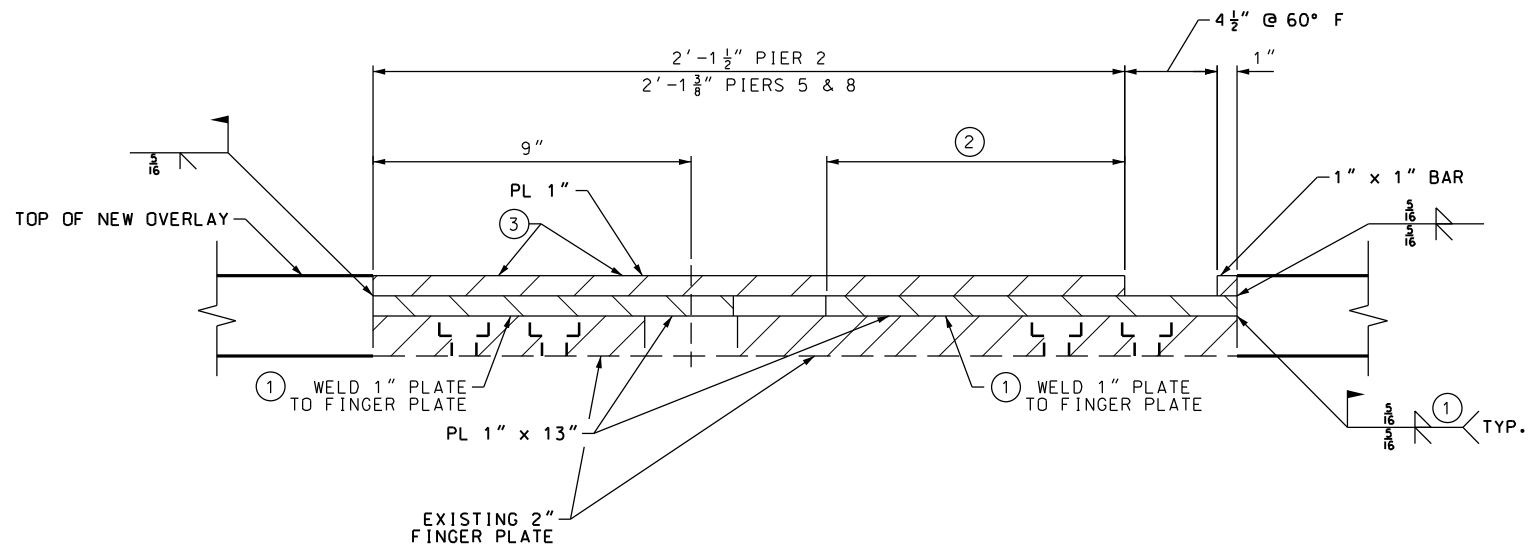
SECTION A-A @ PIERS 2, 5 & 8



PARTIAL PLAN OF EXISTING FINGER PLATE



SECTION B-B

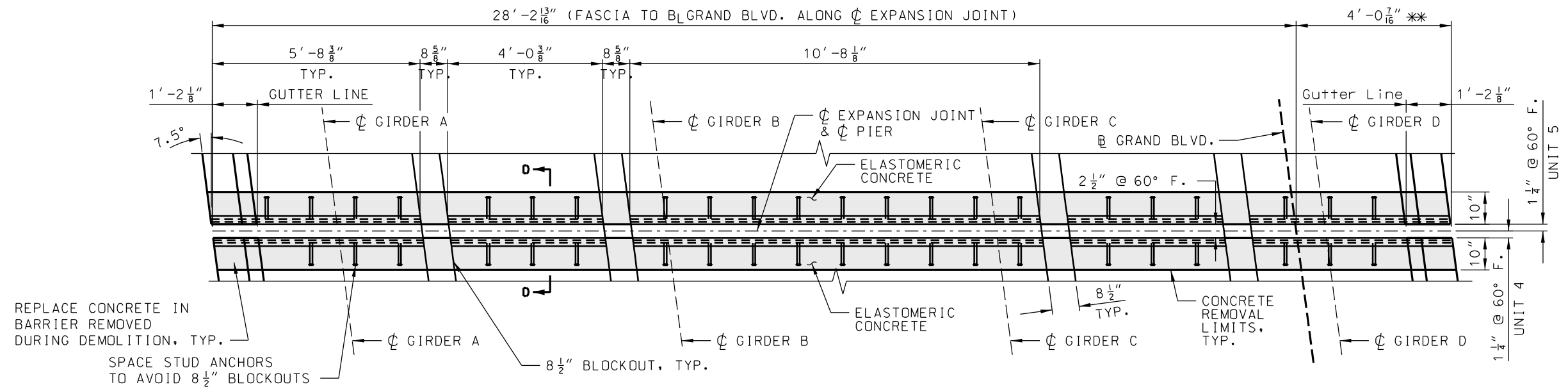


DETAIL C

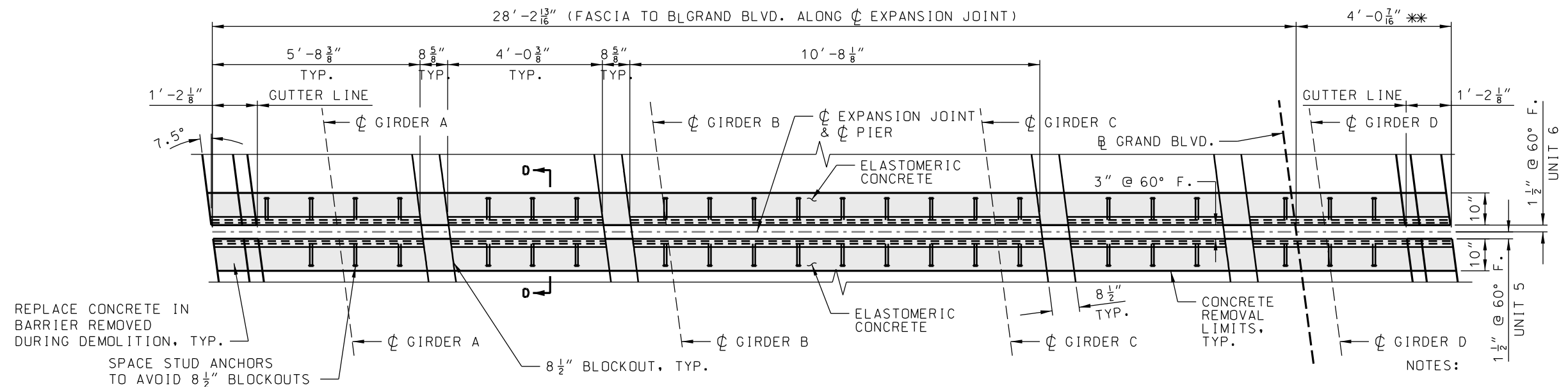
- ① WELD NEW 1" PLATES TO THE EXISTING 2" FINGER PLATES AS SHOWN.
- ② SLIDING AREA BETWEEN NEW 1" PLATES.
- ③ $\phi \frac{1}{2}$ " DIA. HOLES AT 6" MAX. SPACING FOR PLUG WELDS TO 1"x13" PLATE. GRIND TOP OF PLUG WELDS SMOOTH. REFER TO PLAN VIEWS FOR LOCATION OF PLUG WELDS.

NOTES:
FOR LOCATIONS OF SECTION A-A AND B-B,
SEE ST104 AND ST105

REV	DATE	DESCRIPTION	DESIGNED BY	TW	DATE	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NO SCALE, FOLLOW DIMENSIONS
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			APPROVED BY	CDH					CONTRACT NO. ***
									VOLUME:
									DRAWING NO.:
									SHEET NO.:
									ST106 286



PIER 11
PLAN

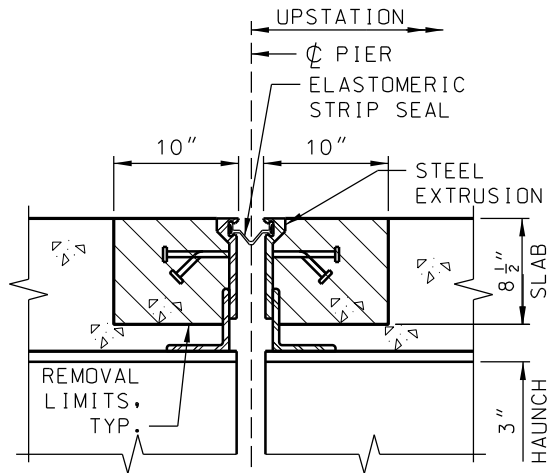


PIER 12
PLAN

NOTES:
SEE ST108 FOR SECTIONS D-D AND
ADDITIONAL STRIP SEAL DETAILS.
THE CONCRETE PLACED IN THE BARRIER
CURB SHALL BE CONCRETE (BRIDGE) IN
ACCORDANCE WITH THE PROJECT MANUAL.

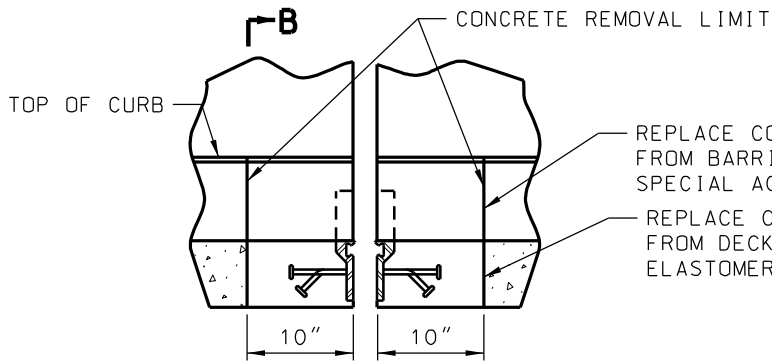
** DENOTES B GRAND BLVD. TO FASCIA
ALONG Q EXPANSION DEVICE.

REV	DATE	DESCRIPTION	DESIGNED BY	TW	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	TH	HDR	HDR Engineering, Inc.		FILENAME:
			DRAWN BY	BW/BS	10450 Holmes Road	7733 N. Wallace Ave.		02-ST107-StripSealPlan_Pier11-12.dgn
			CHECKED BY	TW/TH	Suite 600	Kansas City, MO 64131-3471		CONTRACT NO.:
			APPROVED BY	CDH	816-360-2700	816-912-4720		CONTRACT NO. ***
					Certificate of Authority: 000856	Certificate of Authority: 2010005873		VOLUME:
								DRAWING NO.:
								SHEET NO.:
								ST107 287



SECTION D-D

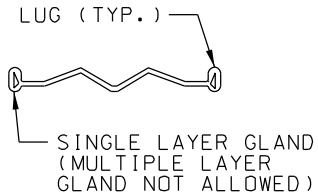
(STRIP SEAL REMOVAL DETAIL)



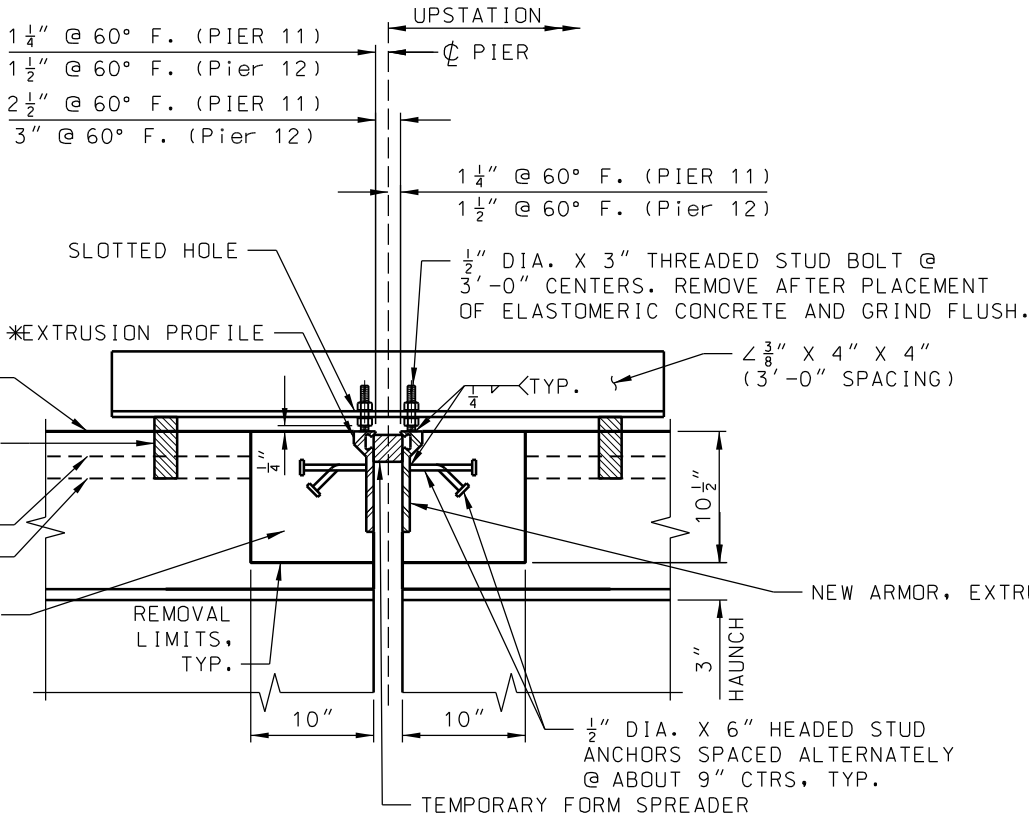
PART ELEVATION OF BARRIER

STRIP SEAL GLAND NOT SHOWN FOR CLARITY.

NOTE: EXISTING BARRIER CURB REINFORCING STEEL SHALL BE MAINTAINED.



DETAIL OF GLAND

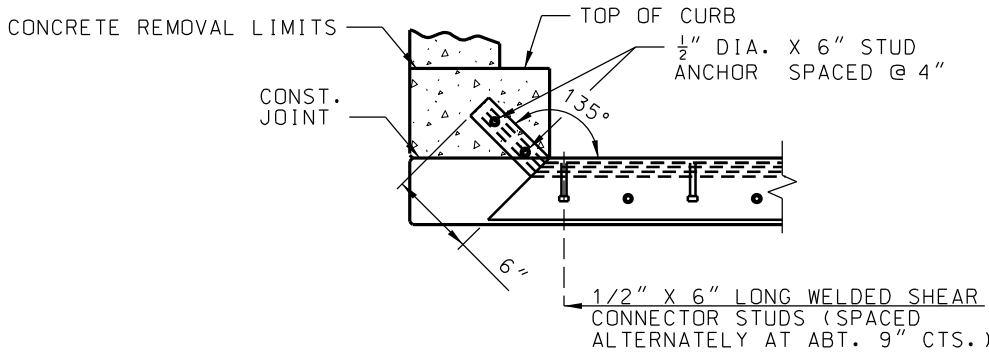


* USE A PROFILE WITHOUT A HORIZONTAL LEG.

SECTION D-D

(NEW STRIP SEAL INSTALLATION DETAIL)

NOTES: THE 4"X 4" ANGLE, BLOCKING, FORM SPREADER AND THREADED STUD BOLT WILL BE REMOVED AND THE NEW GLAND INSTALLED AFTER THE ELASTOMERIC CONCRETE HAS CURED. FOR LOCATION OF SECTION D-D, SEE ST107



PART SECTION B-B

GENERAL NOTES:

STRUCTURAL STEEL FOR THE EXPANSION JOINT SYSTEM SHALL BE ASTM A709 GRADE 36 EXCEPT THE STEEL ARMOR MAY BE ASTM A709 GRADE 50W. ANCHORS FOR THE EXPANSION JOINT SYSTEM SHALL BE IN ACCORDANCE WITH MODOT SEC 1037. STRIP SEAL EXPANSION JOINT SYSTEM SHALL BE IN ACCORDANCE WITH MODOT SEC 717.

STRUCTURAL STEEL FOR THE EXPANSION JOINT SYSTEM SHALL BE COATED WITH A MINIMUM OF TWO COATS OF INORGANIC ZINC PRIMER TO PROVIDE A TOTAL DRY FILM THICKNESS OF 4 MILS MINIMUM, 6 MILS MAXIMUM, OR GALVANIZED IN ACCORDANCE WITH ASTM A123. ANCHORS NEED NOT BE PROTECTED FROM OVERSPRAY.

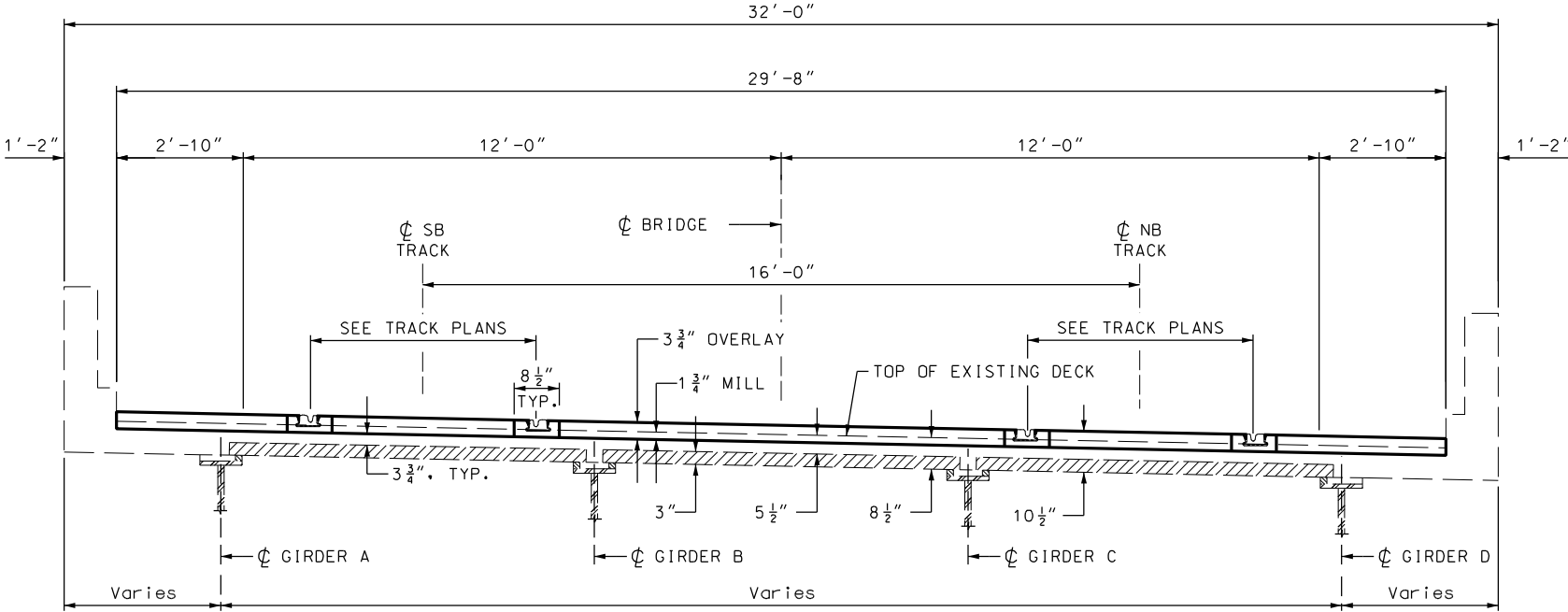
CONCRETE SHALL BE FORCED UNDER AND AROUND STEEL ARMOR AND ANCHORS. PROPER CONSOLIDATION OF THE CONCRETE SHALL BE ACHIEVED BY LOCALIZED INTERNAL VIBRATION.

THE INSTALLATION TEMPERATURE SHALL BE TAKEN AS THE ACTUAL AIR TEMPERATURE AVERAGED OVER THE 24-HOUR PERIOD IMMEDIATELY PRECEDING INSTALLATION. THE GAP IS BASED ON A TEMPERATURE OF 60 DEGREES F. MEASURED PERPENDICULAR TO C EXPANSION JOINT. FOR EVERY 10 DEGREES F, INCREASE IN TEMPERATURE, THE GAP WIDTH SHALL BE REDUCED 1/8". FOR EVERY 10 DEGREE F, DECREASE IN TEMPERATURE, THE GAP SHALL BE INCREASED BY 1/8".

STEEL ARMOR MAY ALSO BE REFERRED TO AS EXTRUSION OR RAIL.

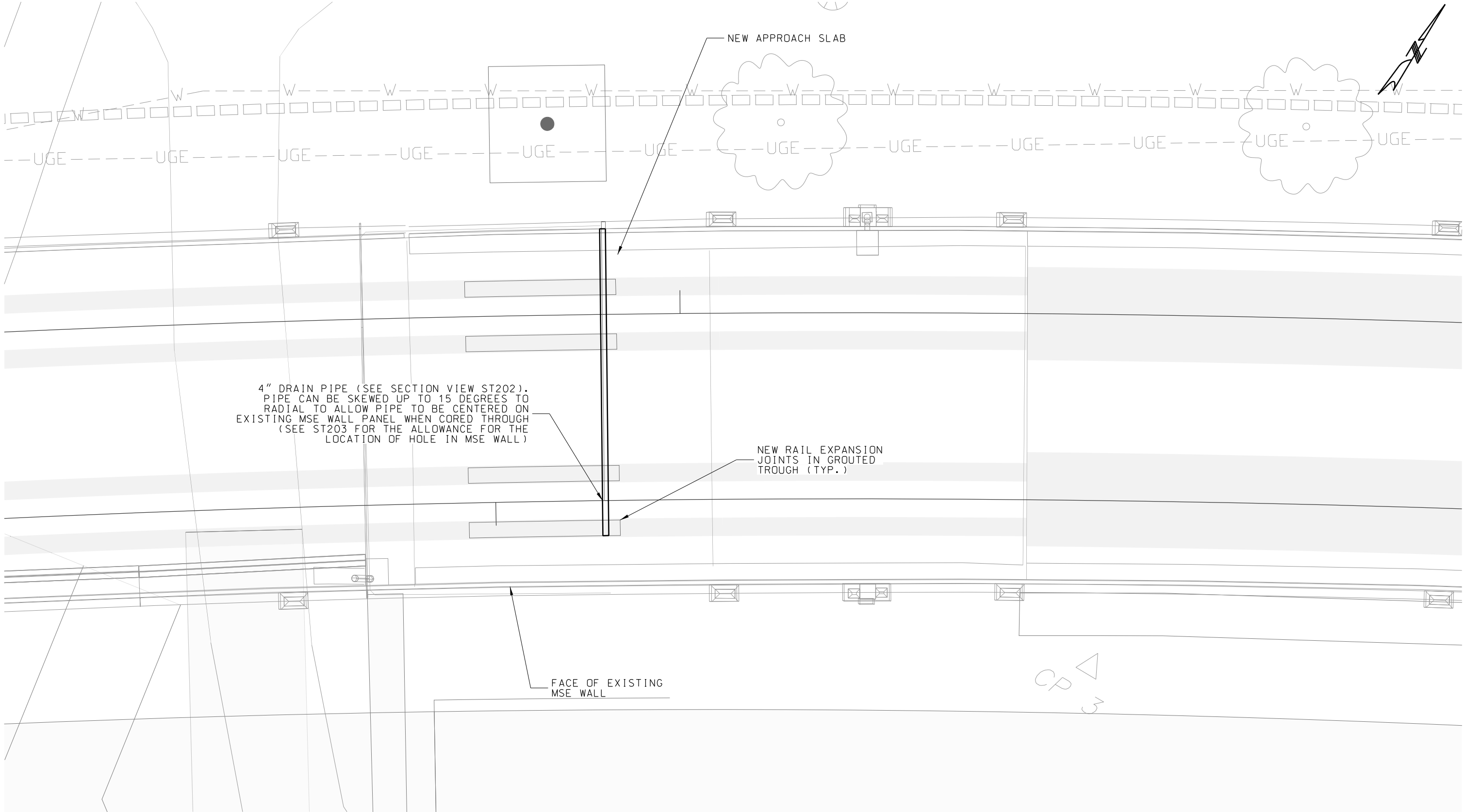
THE CONCRETE PLACED AROUND THE NEW STRIP SEAL SHALL BE ELASTOMERIC CONCRETE. BARRIER CURB CONCRETE SHALL BE CONCRETE (BRIDGE) PER THE PROJECT MANUAL.

REV	DATE	DESCRIPTION	DESIGNED BY	TW	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	TH	HDR	HDR Engineering, Inc.	BASE BID - 112TRAM JOINTS	FILENAME:
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			CHECKED BY	TW/TH	Suite 600	Kansas City, MO 64131-3471		CONTRACT NO.:
			APPROVED BY	CDH	816-360-2700	816-912-4720		CONTRACT NO. ***
					Certificate of Authority: 000856	Certificate of Authority: 2010005873		VOLUME:
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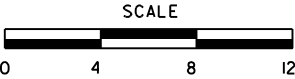


TYPICAL SECTION
THROUGH 112 RAIL

REV	DATE	DESCRIPTION	DESIGNED BY	TW		 TERENCE A. HOOD - ENGINEER LICENSE NO. 2014030630	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION BASE BID - 112TRAM JOINTS BRIDGE TYPICAL SECTION	SCALE FOR 22"x34": NO SCALE, FOLLOW DIMENSIONS FILENAME: I02-ST109_TypSect.s.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: ST109 289
			CHECKED BY	TH			HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 HG Consult, Inc. 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873	NOT FOR CONSTRUCTION		
			DRAWN BY	BW/BS						
			CHECKED BY	TW/TH						
			APPROVED BY	CDH						
PLOT DATE: 12/22/2022			5:19:24 PM		DATE	12-23-2022				



PLAN VIEW - ABUTMENT 2
(ABUTMENT 1 SIMILAR)



REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		5:19:28 PM

DESIGNED BY	MMQ
CHECKED BY	CDH
DRAWN BY	MMQ
CHECKED BY	CDH
APPROVED BY	CDH
DATE	12-23-2022

ISSUED FOR BID

DATE: 12-23-2022

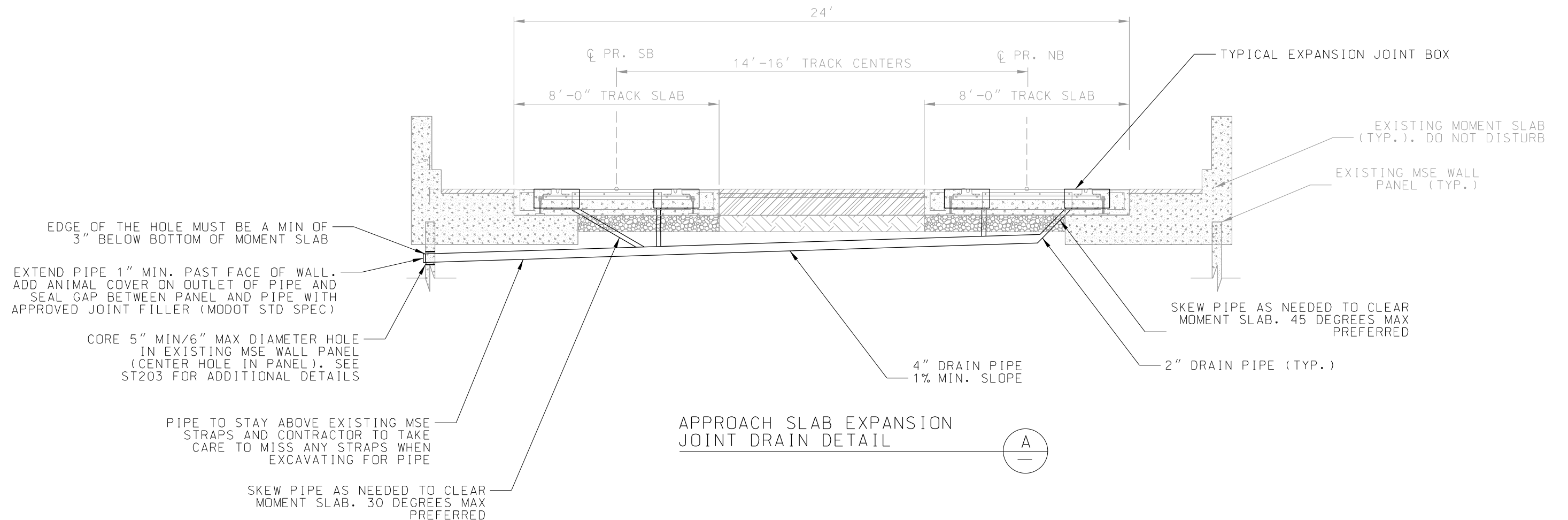
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

NOT FOR CONSTRUCTION

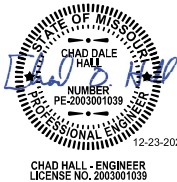
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

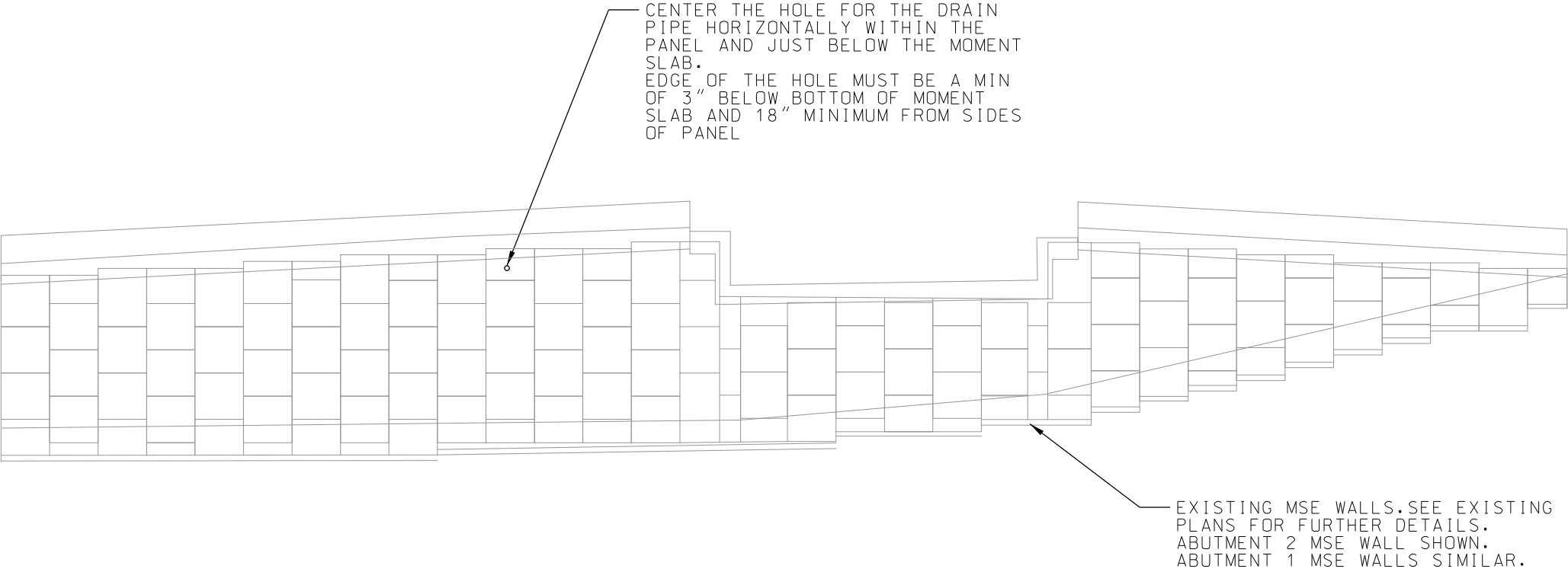
PLAN VIEW - ABUTMENT 2 - TRACK DRAIN

SCALE FOR 22"x34": 1" = 4'	
FILENAME: ST201.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.: ST201	SHEET NO.: 290



- NOTES:
1. REFER TO TRACK K902 AND K903 FOR THE EXPANSION JOINT DETAILS AND LOCATIONS
 2. REFER TO PROJECT GEOTECHNICAL REPORT FOR ENGINEERING RECOMMENDATIONS REGARDING UNSUITABLE MATERIAL. SUBMIT OVER EXCAVATION BACKFILL MATERIAL FOR REVIEW AND APPROVAL BY ENGINEER.
 3. SUBGRADE REQUIRED TO MEET COMPACTION REQUIREMENTS OUTLINED IN THE GEOTECHNICAL REPORT.
 4. SEE K902 AND K903 FOR TRACK SLAB DETAILS. ALL TRACK SLAB CONCRETE SHALL BE F'C = 4500 PSI WITH MICROFIBER DOSING, 3 LB PER CY.
 5. SEE ST100 TO ST109 FOR GRAND BOULEVARD VIADUCT BRIDGE DETAILS.
 6. SEE D106 FOR ADDITIONAL DETAILS.
 7. SEE EXISTING BRIDGE PLANS FOR DETAILS OF EXISTING MSE WALLS AND MOMENT SLABS.

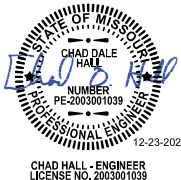
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			CHECKED BY	CDH						
			APPROVED BY	CDH						
PLOT DATE: 12/22/2022			5:19:30 PM		DATE 12-23-2022		NOT FOR CONSTRUCTION		APPROACH SLAB EXPANSION JOINT DRAIN DETAIL	

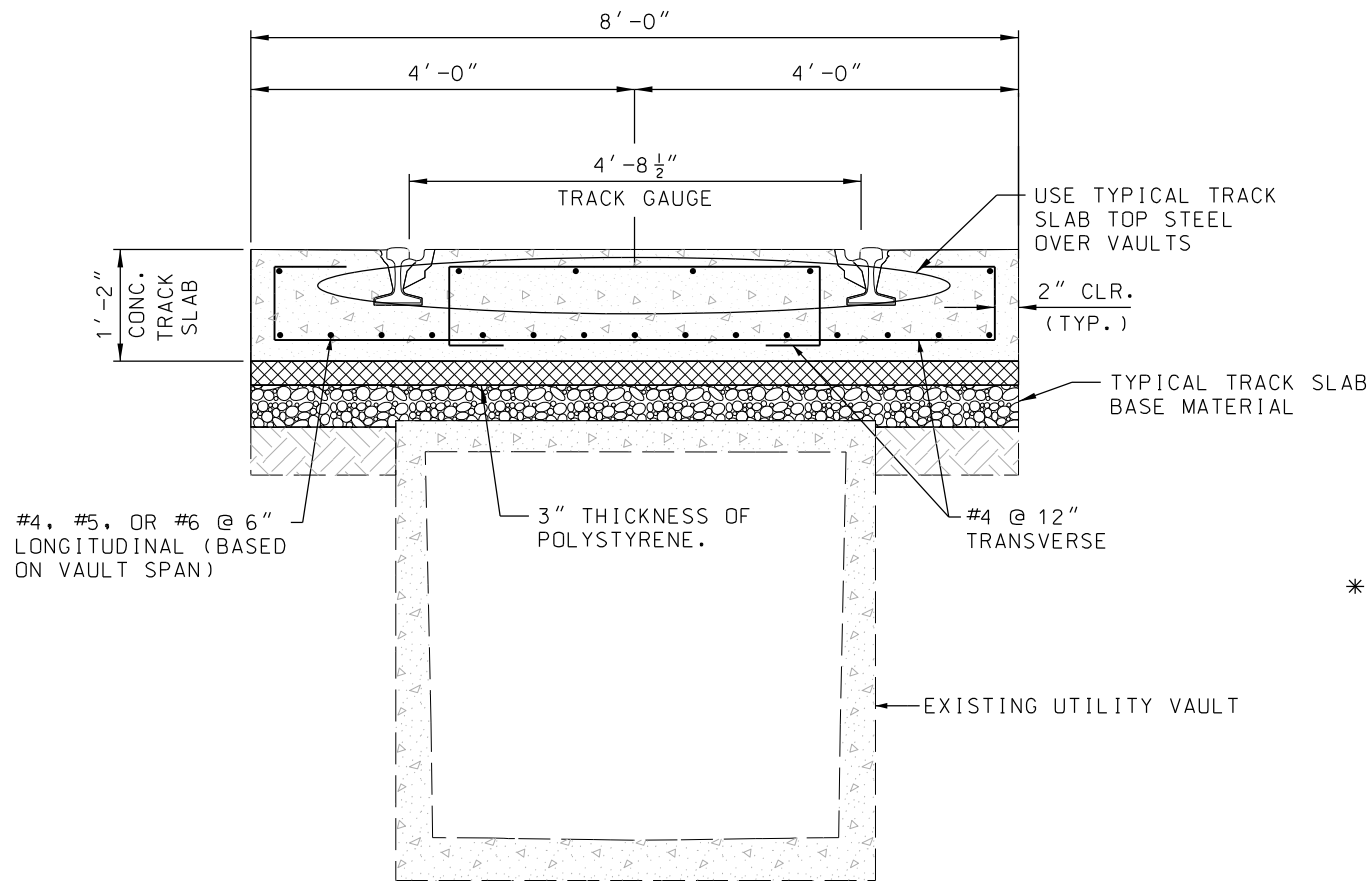


ELEVATION – FRONT FACING
(LOOKING AHEAD)

A

—

REV	DATE	DESCRIPTION	DESIGNED BY	MMO		 CHAD HALL - ENGINEER LICENSE NO. 2003001039	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	EXISTING MSE WALLS	SCALE FOR 22"x34": NOT TO SCALE			
			CHECKED BY	CDH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION			FILENAME:			
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			APPROVED BY	CDH							VOLUME:	1		
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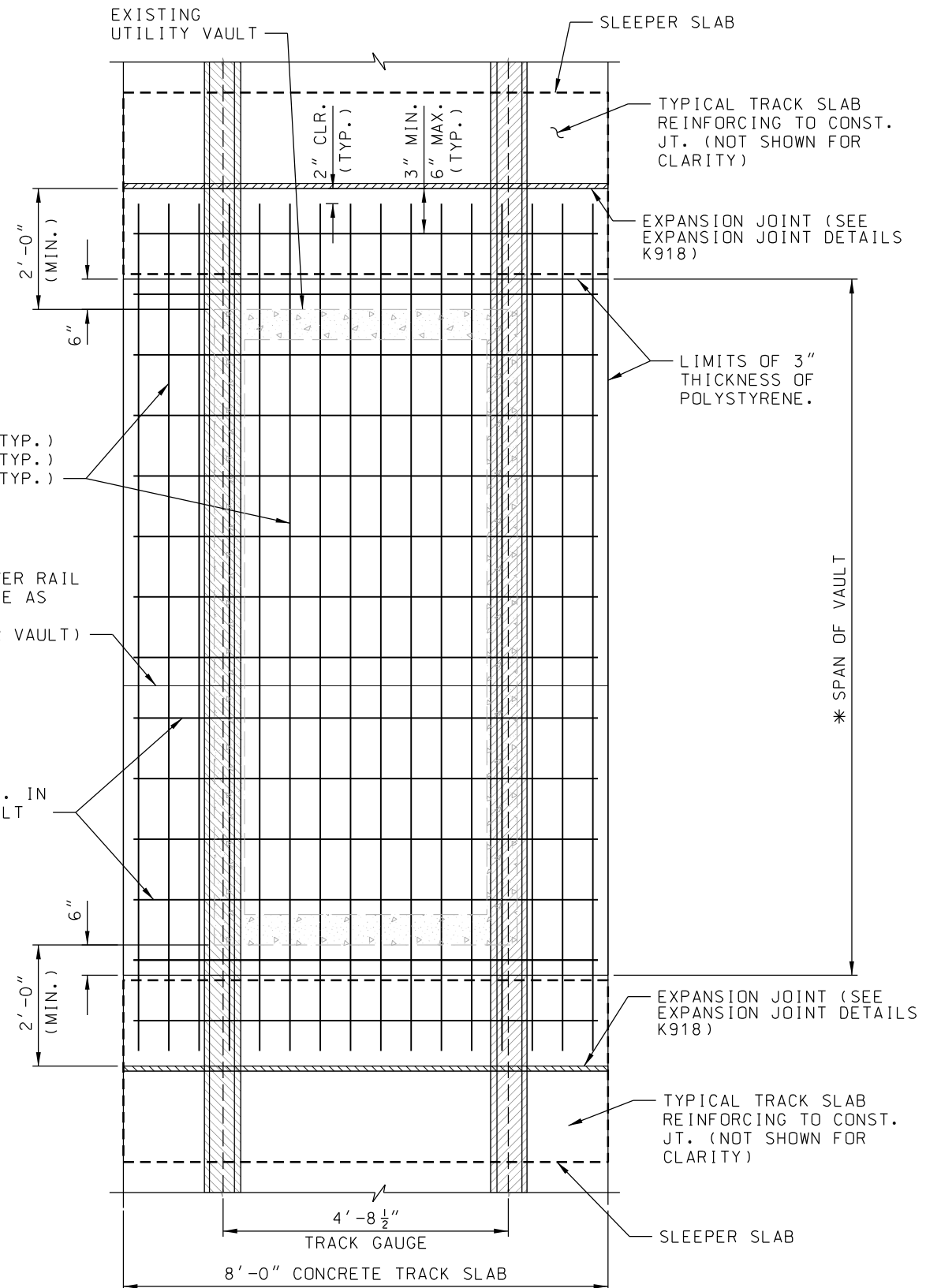
TRACK SLAB OVER
EXISTING UTILITY VAULT
NOT TO SCALE

A

SPAN > 12' #6 @ 6" (TYP.)
 12' ≥ SPAN > 7' #5 @ 6" (TYP.)
 SPAN ≤ 7' #4 @ 6" (TYP.)
 * SPAN IS BASED ON
 LIMITS OF POLYSTYRENE

CONST. JOINT OVER RAIL
 SUPPORTS (LOCATE AS
 NEEDED, BARS
 CONTINUOUS OVER VAULT)

#4 @ 12" (TYP. IN
 SLAB OVER VAULT)



TRACK SLAB OVER EXISTING
UTILITY VAULT PLAN
NOT TO SCALE

B

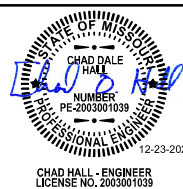
NOTES:

ALL EXISTING STRUCTURE IS SHOWN DASHED. NEW CONSTRUCTION SHOWN IN HEAVY SOLID LINES.

TRACK GAUGE IS MEASURED AT 5/8" BELOW TOP OF RAIL AND FROM THE GAUGE FACE TO GAUGE FACE.

REINFORCING STEEL SHALL BE ASTM A-615 GRADE 60 (EPOXY COATED).

REV	DATE	DESCRIPTION	DESIGNED BY	MMQ
			CHECKED BY	CDH
			DRAWN BY	MMQ
			CHECKED BY	CDH
			APPROVED BY	CDH
PLOT DATE: 12/22/2022 5:19:36 PM			DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

TRACK SLAB DETAIL OVER UTILITY VAULT

SCALE FOR 22"x34": NOT TO SCALE	
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CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
ST204	293

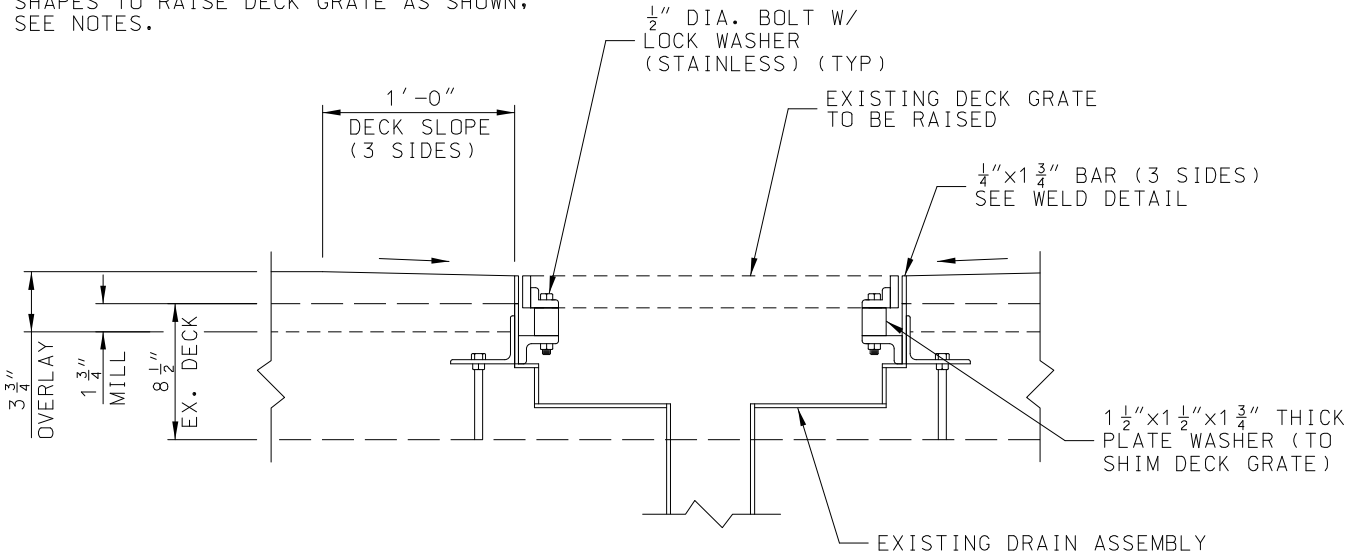
ESTIMATED QUANTITIES			
ITEM		SUBSTR.	SUPERSTR. TOTAL
1 3/4" DECK MILLING	SQUARE YD.		3,707 3,707
PARTIAL REMOVAL OF EXISTING BRIDGE DECK	SQUARE FT.		5,927 5,927
REMOVAL OF EXISTING STRIP SEAL JOINT	LUMP SUM		1 1
3 3/4" OVERLAY	SQUARE YD.		3,355 3,355
SLAB ON STEEL	SQUARE YD.		659 659
CONCRETE CURB (BRIDGE RAIL)	LINEAR FEET		380 380
STRIP SEAL EXPANSION JOINT SYSTEM	LINEAR FEET		65 65
FINGER JOINT MODIFICATIONS	EACH		3 3

TRACK EXPANSION JOINTS AND EPOXY GROUT QUANTITIES CAN BE FOUND WITH TRACK DETAILS.

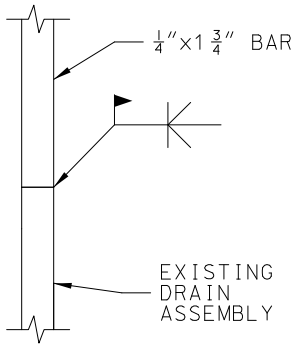
ESTIMATED QUANTITES FOR SLAB ON STEEL		
ITEM		Total
CONCRETE (BRIDGE)	CU. YARD	220.7
REINFORCING STEEL (EPOXY COATED)	POUND	39,550

THE AREA OF THE CONCRETE SLAB WILL BE MEASURED TO THE NEAREST SQUARE YARD TO THE LIMITS OF THE PARTIAL REMOVAL OF THE EXISTING BRIDGE DECK.

NOTE:
CONTRACTOR SHALL SALVAGE AND RE-USE DECK GRATE AND MISCELLANEOUS STEEL SHAPES TO RAISE DECK GRATE AS SHOWN, SEE NOTES.



DECK DRAIN SHIM DETAIL



WELD DETAIL

GENERAL NOTES:

DESIGN SPECIFICATION:
2020 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, (9TH ED.) (FOR SLAB DESIGN).

AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES, 14TH ED., 1988 AND INTERIMS THROUGH 1991, LOAD FACTOR DESIGN.

THE MISSOURI DEPARTMENT OF TRANSPORTATION (MoDOT) ENGINEERING POLICY GUIDE (EPG)

CONSTRUCTION AND MATERIALS SPECIFICATIONS:
MISSOURI STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, 2020 AND SUPPLEMENTAL SPECIFICATIONS REVISIONS. STANDARD SPECIFICATIONS AND DESIGN CRITERIA, KANSAS CITY METROPOLITAN CHAPTER APWA. (APWA SPEC.) SUPERSTRUCTURE AND SUBSTRUCTURE CONCRETE AND OTHER ITEMS BESIDES CONCRETE SHALL BE IN ACCORDANCE WITH PROJECT MANUAL.

DESIGN UNIT STRESSES:

CONCRETE (OVERLAY) (SEE PROJECT MANUAL)	f'c = 4,500 psi
CONCRETE (BRIDGE) (SEE PROJECT MANUAL)	f'c = 4,500 psi
REINFORCING STEEL (GRADE 60)	fy = 60,000 psi
STEEL (ASTM A709 GRADE 50)	fy = 50,000 psi

ALL LABOR AND MATERIAL REQUIRED TO REMOVE THE STRIP SEAL EXPANSION JOINTS AS SHOWN ON THE PLANS ARE INCLUDED IN THE BID ITEM "REMOVAL OF EXISTING STRIP SEAL JOINT".

SEE DRAWING ST311 FOR THE STRIP SEAL INSTALLATION DETAILS. THE LABOR AND CONCRETE (BRIDGE) PLACED IN THE BLOCKOUT FOR THE STRIP SEAL IS SUBSIDIARY TO THE COST OF "STRIP SEAL EXPANSION JOINT SYSTEM".

ALL LABOR AND MATERIAL REQUIRED TO MODIFY THE FINGER JOINTS AS SHOWN ON THE PLANS ARE INCLUDED IN THE BID ITEM "FINGER JOINT MODIFICATIONS".

SEE EXISTING PLANS FOR DIMENSIONS AND DETAILS NOT SHOWN. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS BEFORE ORDERING NEW MATERIAL OR BEGINNING CONSTRUCTION.

THE OUTER DIMENSIONS SHOWN ON THE CONCRETE REMOVAL DRAWINGS ARE ALONG THE OUTER EDGE OF THE SLAB. THE DIMENSIONS SHOWN FOR THE REMOVAL AND REPLACEMENT OF THE BARRIERS ARE ALONG THE OUTER EDGE OF THE BARRIER. THE BARRIER AND SLAB DIMENSIONS MAY VARY SLIGHTLY.

ALL LABOR AND MATERIAL REQUIRED TO REMOVE THE CONCRETE SLAB AND BRIDGE RAIL AS SHOWN ON THE PLANS ARE INCLUDED IN THE BID ITEM "PARTIAL REMOVAL OF EXISTING BRIDGE DECK". OTHER LABOR INCLUDED WITH THIS BID ITEM ARE REMOVING AND STORING THE EXISTING LIGHT FIXTURES AND DECK DRAINS AND DOWNSPOUTS THAT ARE WITHIN THE BRIDGE DECK REMOVAL LIMITS AS SHOWN ON THE PLANS.

REINFORCING STEEL:
MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 1 1/2", UNLESS OTHERWISE SHOWN.

INCIDENTAL COST TO BID ITEM SLAB ON STEEL:
THE WELDED WIRE FABRIC AS SHOWN ON THE SLAB SECTION DRAWING SHALL BE EPOXY COATED. THE WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 IF IT IS MADE OF PLAIN WIRE AND CONFORM TO ASTM A497 IF IT IS MADE OF DEFORMED WIRE. THE COST TO FURNISH AND INSTALL THE WELDED WIRE FABRIC ARE CONSIDERED INCIDENTAL TO THE COST OF "SLAB ON STEEL".

ALL LABOR AND MATERIAL REQUIRED TO REINSTALL THE LIGHT FIXTURES (INCLUDING NEW CONDUIT, WIRES, JUNCTION BOXES, ETC.) AND REINSTALL THE DRAINS, THE DRAIN PIPES AND DOWNSPOUTS (INCLUDING NEW ATTACHMENT HARDWARE) THAT WERE REMOVED DURING DECK DEMOLITION ARE INCIDENTAL TO THE COST OF "SLAB ON STEEL".

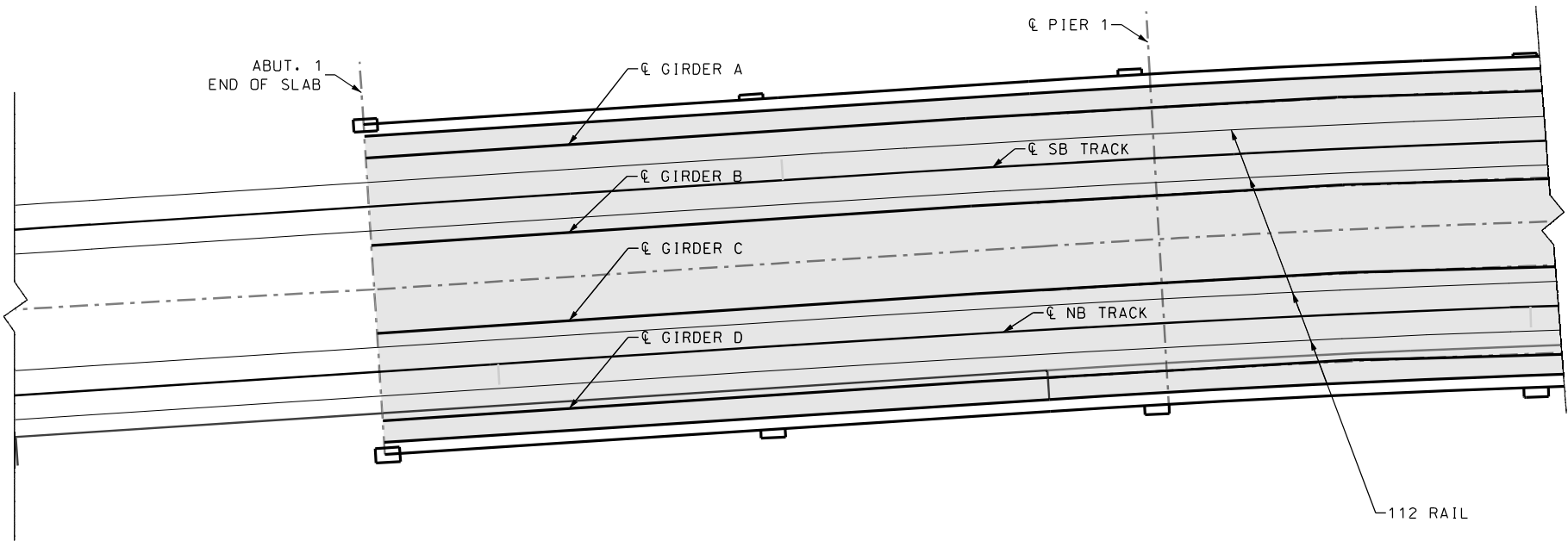
CONCRETE REMOVAL NOTES:
CLEARLY MARK THE LOCATION OF THE EXISTING GIRDER TOP FLANGES ON TOP OF THE EXISTING DECK CONCRETE. MARK THE ENTIRE LENGTH OF ALL GIRDERS BEFORE SAWING OR REMOVING ANY CONCRETE. CONCRETE SAWING SHALL BE LIMITED TO A MAXIMUM DEPTH OF 3 INCHES DIRECTLY ABOVE ANY GIRDER AND WITHIN 3 INCHES OF EITHER EDGE OF A GIRDER TOP FLANGE. DO NOT USE DROP-TYPE PAVEMENT BREAKERS. DO NOT USE A HOE RAM DIRECTLY ABOVE ANY GIRDER OR WITHIN ONE FOOT OF EITHER EDGE OF A GIRDER TOP FLANGE. USE A JACKHAMMER NO HEAVIER THAN 35 LBS. TO REMOVE CONCRETE ABOVE AND WITHIN ONE FOOT OF EITHER SIDE OF A GIRDER TOP FLANGE.

DAMAGE TO THE EXISTING STRUCTURAL STEEL CAUSED BY PROCEDURES NOT CONFORMING TO THE ABOVE RECOMMENDATIONS SHALL BE REPAIRED AS DIRECTED BY THE ENGINEER AT THE CONTRACTOR'S EXPENSE (NO COST TO THE KCATA). ANY COSTS INCURRED FOR TESTING OR ENGINEERING EVALUATIONS WILL BE INCLUDED IN THE BID ITEM "SLAB ON STEEL". CARE SHALL BE TAKEN TO PREVENT RUBBLE FROM FALLING ONTO THE ROADWAY AND RAILROAD BELOW. THE CONTRACTOR WILL BE REQUIRED TO CLEAN THE SITE OF ANY RUBBLE CAUSED BY REMOVAL OPERATIONS AS DIRECTED BY THE ENGINEER. ALL MATERIALS REMOVED FROM THE EXISTING STRUCTURE SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE REMOVED FROM THE SITE. THE CONTRACTOR SHALL SUBMIT A PLAN FOR PROTECTION TO THE TRAFFIC AND RAILROAD UNDER THE BRIDGE FOR APPROVAL BY THE ENGINEER.

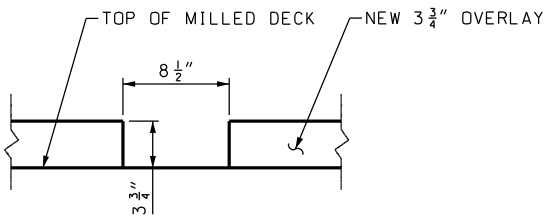
EXISTING DOWNSPOUTS:
THE CONTRACTOR WILL EXTEND THE LENGTH OF THE EXISTING DOWNSPOUTS THAT WILL BE REMOVED AND REINSTALLED. THE DOWNSPOUTS WILL NEED TO BE EXTENDED 2" WITH EITHER A NEOPRENE SLEEVE OR WELDING ADDITIONAL PIPE TO THE END OF THE DOWNSPOUT. THE CONTRACTOR WILL SUBMIT A DOWNSPOUT EXTENSION DETAIL THAT WILL NEED TO BE APPROVED BY THE ENGINEER BEFORE WORK CAN BEGIN. THE COST FOR THE LABOR AND MATERIAL REQUIRED TO EXTEND THE DOWNSPOUTS IS INCIDENTAL TO THE COST OF "SLAB ON STEEL".

DECK DRAINS THAT ARE NOT REMOVED:
THE DECK DRAINS THAT ARE NOT REMOVED WILL BE SHIMMED UP 2" TO ACCOUNT FOR THE ADDITIONAL 2" FROM THE NEW 3 3/4" OVERLAY. THE COST FOR THE LABOR AND MATERIAL REQUIRED TO SHIM UP THE DECK DRAINS IS INCIDENTAL TO THE COST OF "3 3/4" OVERLAY".

REV	DATE	DESCRIPTION	DESIGNED BY	TW			ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":					
			CHECKED BY	TH													
			DRAWN BY	BW/BS													
			CHECKED BY	TW/TH													
			APPROVED BY	CDH													
PLOT DATE: 12/22/2022			5:19:38 PM		DATE 12-23-2022		NOT FOR CONSTRUCTION				BID ALTERNATE – 115RE JOINTS GENERAL NOTES		FILENAME: H5-ST300_GenNotes.dgn				
													CONTRACT NO.: CONTRACT NO. ***				
													VOLUME: 1				
													DRAWING NO.: ST300				
													SHEET NO.: 294				



PLAN



TYPICAL 8½ x 3¾" BLOCKOUT DETAIL FOR OVERLAY
(CENTER BLOCKOUT ON NEW RAIL)

MILLING NOTES

MILL THE EXISTING DECK 1¾" DEEP FROM GUTTER TO GUTTER STARTING AT THE END OF SLAB AND STOPPING AT THE EDGE OF THE DECK REPLACEMENT LIMITS

SEE TRACK PLANS K001-K921 FOR ADDITIONAL RAIL JOINT AND TRACK DETAILS.

LEGEND

MILL AND OVERLAY

OVERLAY NOTES

THE NEW 3¾" OVERLAY WILL EXTEND FROM GUTTER TO GUTTER THE FULL LENGTH OF THE BRIDGE EXCEPT AT THE DECK REPLACEMENT LIMITS. THE TYPICAL 8½" x 3¾" BLOCKOUT IN THE OVERLAY WILL BE THE FULL LENGTH OF THE BRIDGE EXCEPT AT THE DECK REPLACEMENT LIMITS.

REV	DATE	DESCRIPTION	DESIGNED BY	TW			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NO SCALE, FOLLOW DIMENSIONS				
			CHECKED BY	TH					HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873	FILENAME: H5_ST301_DeckMill_Abut1.dgn		
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PLOT DATE: 12/22/2022			5:19:42 PM		DATE	12-23-2022	TERENCE A. HOOD - ENGINEER LICENSE NO. 2014030630		NOT FOR CONSTRUCTION		BID ALTERNATE – 115RE JOINTS DECK MILL AND OVERLAY LIMITS		ST301	295		

① CONTRACTOR TO REMOVE EXISTING STREET POLE LIGHT LOCATED AT THE BARRIER OF THE BRIDGE AND REMOVE ALL EXISTING WIRES CONNECTED TO EXISTING STREET POLE. CONTRACTOR TO STORE THE EXISTING STREET LIGHT POLE AND RE-INSTALL THE EXISTING STREET LIGHT POLE AFTER THE BARRIER IS RECONSTRUCTED ON THE BRIDGE.

OTHER LIGHTS ON BRIDGE MUST REMAIN OPERATIONAL EVEN WHEN THESE LIGHTS ARE REMOVED.

CONTRACTOR TO INSTALL ALL NEW WIRES FOR THE STREET LIGHT POLE AND REPAIR ANY EXISTING CONDUIT CONNECTED TO THE STREET LIGHT POLE. CONTRACTOR TO ENSURE THE EXISTING STREET LIGHT POLE IS WORKING PROPERLY AFTER INSTALLATION.

LEAVE ALL TRANSVERSE REBAR EMBEDDED IN THE DECK AND LEAVE A MINIMUM OF 3'-0" TO BE LAPPED TO THE NEW TRANSVERSE REBAR

LEAVE ALL TRANSVERSE REBAR EMBEDDED IN THE DECK AND LEAVE A MINIMUM OF 3'-0" TO BE LAPPED TO THE NEW TRANSVERSE REBAR

LEAVE ALL LONGITUDINAL REBAR EMBEDDED IN THE DECK AND LEAVE A MINIMUM OF 3'-0" TO BE LAPPED TO THE NEW LONGITUDINAL REBAR TYPICAL

LEAVE ALL TRANSVERSE REBAR EMBEDDED IN THE DECK AND LEAVE A MINIMUM OF 3'-0" TO BE LAPPED TO THE NEW TRANSVERSE REBAR

CL NB TRACK

LEAVE ALL TRANSVERSE REBAR EMBEDDED IN THE DECK AND LEAVE A MINIMUM OF 3'-0" TO BE LAPPED TO THE NEW TRANSVERSE REBAR

LIGHTING CONDUIT AND OTHER CONDUITS ON BRIDGE TO BE SUPPORTED AND LEFT IN PLACE

BRIDGE DECK AND BARRIER REMOVAL AND RECONSTRUCTION LIMITS

CONCRETE DECK REMOVAL LINE & EDGE OF PRECAST DECK PANEL (TYP.)

LEAVE ALL TRANSVERSE REBAR EMBEDDED IN THE DECK AND LEAVE A MINIMUM OF 3'-0" TO BE LAPPED TO THE NEW TRANSVERSE REBAR

LEAVE ALL LONGITUDINAL REBAR EMBEDDED IN THE DECK AND LEAVE A MINIMUM OF 3'-0" TO BE LAPPED TO THE NEW LONGITUDINAL REBAR TYPICAL

LEAVE ALL TRANSVERSE REBAR EMBEDDED IN THE DECK AND LEAVE A MINIMUM OF 3'-0" TO BE LAPPED TO THE NEW TRANSVERSE REBAR

CL GIRDER C

CL GIRDER D

BRIDGE DECK AND BARRIER REMOVAL AND RECONSTRUCTION LIMITS

REMOVE AND REINSTALL DECK DRAIN (NOT SHOWN FOR CLARITY)

4'-6"± - TRANSITION RAIL

4'-0"± - 115 RAIL AND BOX THROUGH EXPANSION JOINT

12'-3"± BOX FOR RAIL EXPANSION JOINT

15"± - 115 RAIL

4'-6"± - TRANSITION RAIL

112 RAIL

LEGEND

- MILL AND OVERLAY
- CONCRETE AND PRECAST PANEL REMOVAL

FULL DEPTH DECK REMOVAL LIMITS TRANSVERSE TO GIRDERS SHALL BE LOCATED AT PRECAST PANEL JOINTS. PRECAST PANEL JOINTS DIMENSION LIMIT SHOWN SHALL BE FIELD VERIFIED BY THE CONTRACTOR BEFORE BEGINNING DECK REMOVAL. PANEL LIMITS NEAR SAW CUTS SHALL BE TRANSFERRED TO THE TOP OF THE BRIDGE DECK WITH PAINT MARKINGS.

THE CONTRACTOR SHALL FIELD VERIFY THE BRIDGE GEOMETRY, INCLUDING BUT NOT LIMITED TO, THE LOCATION OF BARRIER POSTS, LIGHTS, CONDUIT, DECK DRAINS AND OPTIONAL CONSTRUCTION JOINTS BEFORE ORDERING MATERIALS AND/OR BEGINNING CONSTRUCTION.

REMOVE AND RESET LIGHTS AS NEEDED. SUPPORT AND MAINTAIN EXISTING CONDUIT ATTACHED TO THE BRIDGE.

SEE TRACK PLANS K001-K922 FOR ADDITIONAL RAIL JOINT AND TRACK DETAILS.

SEE THE FINGER JOINT EXPANSION DETAILS (ST307-ST309) AND STRIP SEAL DETAILS (ST310-ST311) FOR MORE INFORMATION. FOR ADDITIONAL DETAILS OF RAIL EXPANSION JOINT SEE ST309.

SEE ST301 & ST312 FOR DECK MILL AND OVERLAY LIMITS AND DETAILS.

THE FINGER JOINTS WILL REMAIN IN PLACE AND BE MODIFIED. REMOVE THE CONCRETE AROUND FINGER JOINTS AND DO NOT REMOVE THE CONNECTIONS TO THE GIRDERS AND DIAPHRAGMS.

REV	DATE	DESCRIPTION	DESIGNED BY	TW
			CHECKED BY	TH
			DRAWN BY	BW/BS
			CHECKED BY	TW/TH
			APPROVED BY	CDH
PLOT DATE: 12/22/2022			DATE	12-23-2022

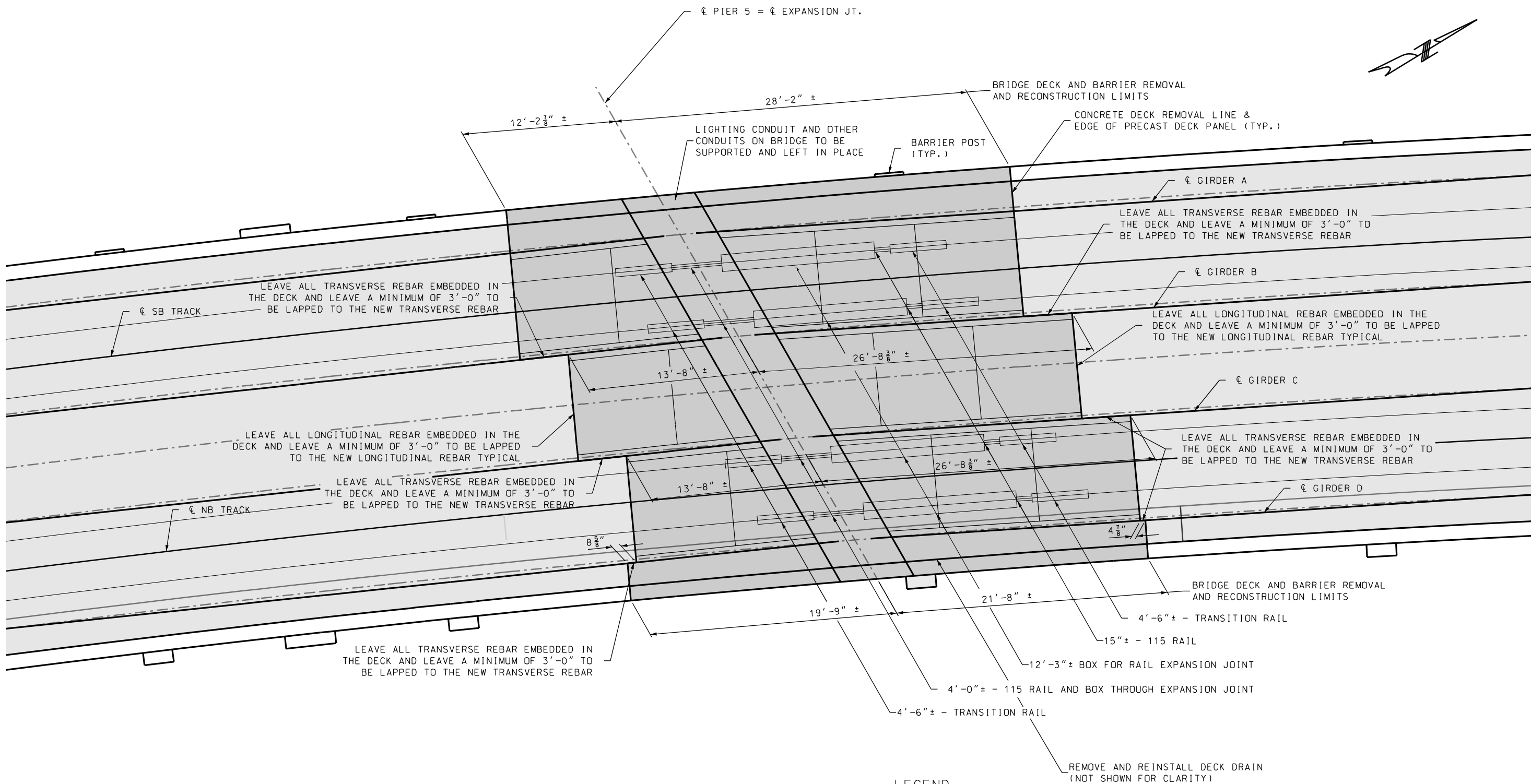


ISSUED FOR BID		DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		HG Consult Inc. 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873
NOT FOR CONSTRUCTION		

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

BID ALTERNATE – 115RE JOINTS
CONCRETE DECK REMOVAL LIMITS - PIER 2

SCALE FOR 22"x34": NO SCALE, FOLLOW DIMENSIONS	
FILENAME: 05-ST302-ConcRem.Pier02.dgn	
CONTRACT NO.: ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
ST302	296



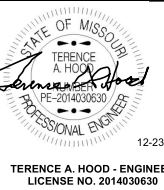
LEGEND

- MILL AND OVERLAY
- CONCRETE AND PRECAST PANEL REMOVAL

NOTES

SEE CONCRETE REMOVAL LIMITS - PIER 2 FOR NOTES.

REV	DATE	DESCRIPTION	DESIGNED BY	TW	DATE	12-23-2022	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
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			APPROVED BY	CDH						CONTRACT NO. ***
										VOLUME:
										DRAWING NO.:
										SHEET NO.:
										ST303 297



HDR
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

HD
HG Consult Inc.
7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

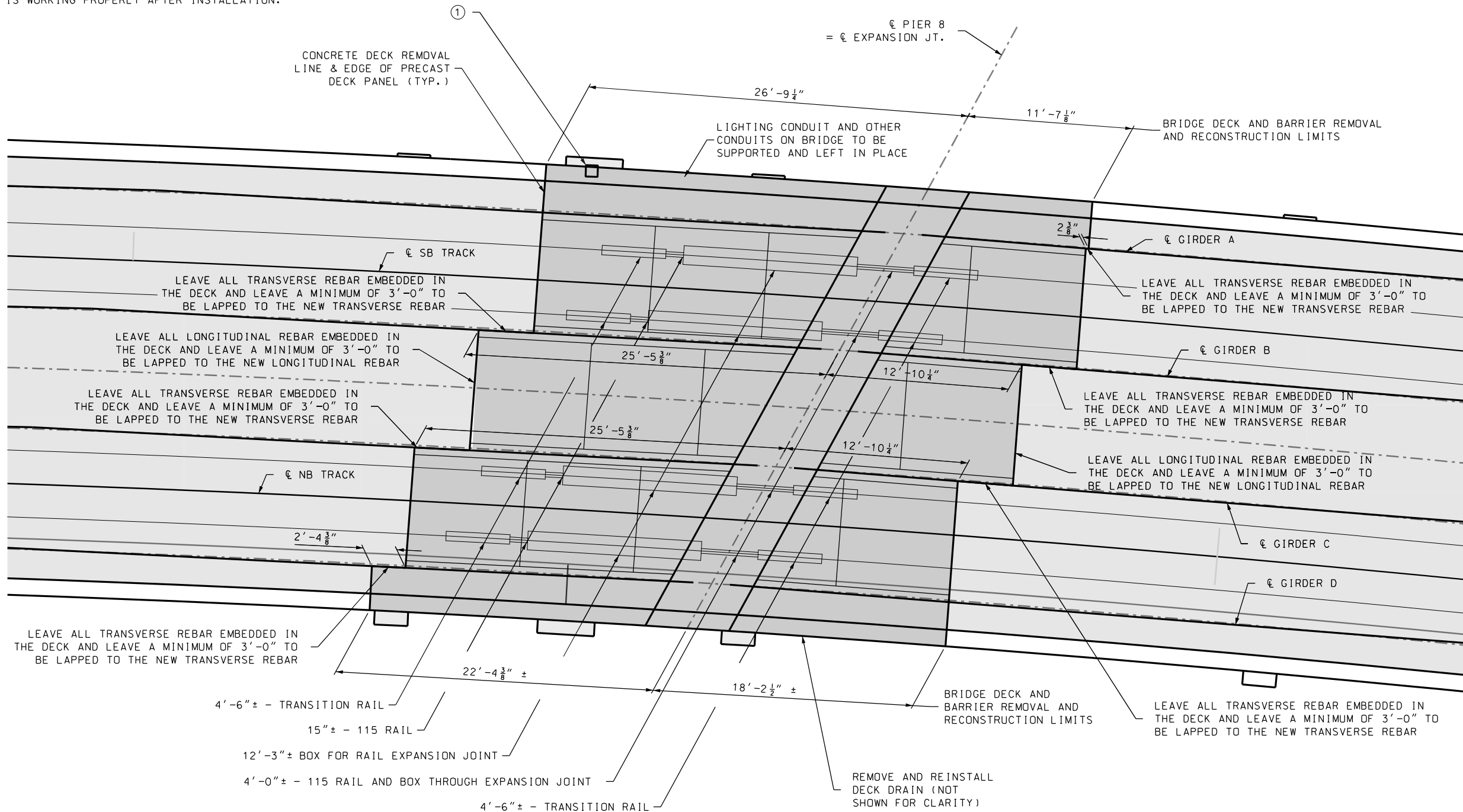
NOT FOR CONSTRUCTION

BID ALTERNATE – 115RE JOINTS
CONCRETE REMOVAL LIMITS - PIER 5

- ① CONTRACTOR TO REMOVE EXISTING STREET POLE LIGHT LOCATED AT THE BARRIER OF THE BRIDGE AND REMOVE ALL EXISTING WIRES CONNECTED TO EXISTING STREET POLE. CONTRACTOR TO STORE THE EXISTING STREET LIGHT POLE AND RE-INSTALL THE EXISTING STREET LIGHT POLE AFTER THE BARRIER IS RECONSTRUCTED ON THE BRIDGE.

OTHER LIGHTS ON BRIDGE MUST REMAIN OPERATIONAL EVEN WHEN THESE LIGHTS ARE REMOVED.

CONTRACTOR TO INSTALL ALL NEW WIRES FOR THE STREET LIGHT POLE AND REPAIR ANY EXISTING CONDUIT CONNECTED TO THE STREET LIGHT POLE. CONTRACTOR TO ENSURE THE EXISTING STREET LIGHT POLE IS WORKING PROPERLY AFTER INSTALLATION.



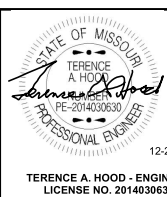
LEGEND

 MILL AND OVERLAY
 CONCRETE AND PRECAST
 PANEL REMOVAL

NOTES

SEE CONCRETE REMOVAL LIMITS - PIER 2 FOR NOTES.

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			CHECKED BY	TH
			DRAWN BY	BW/BS
			CHECKED BY	TW/TH
			APPROVED BY	CDH
PLOT DATE: 12/22/2022			5:19:53 PM	DATE 12-23-2022

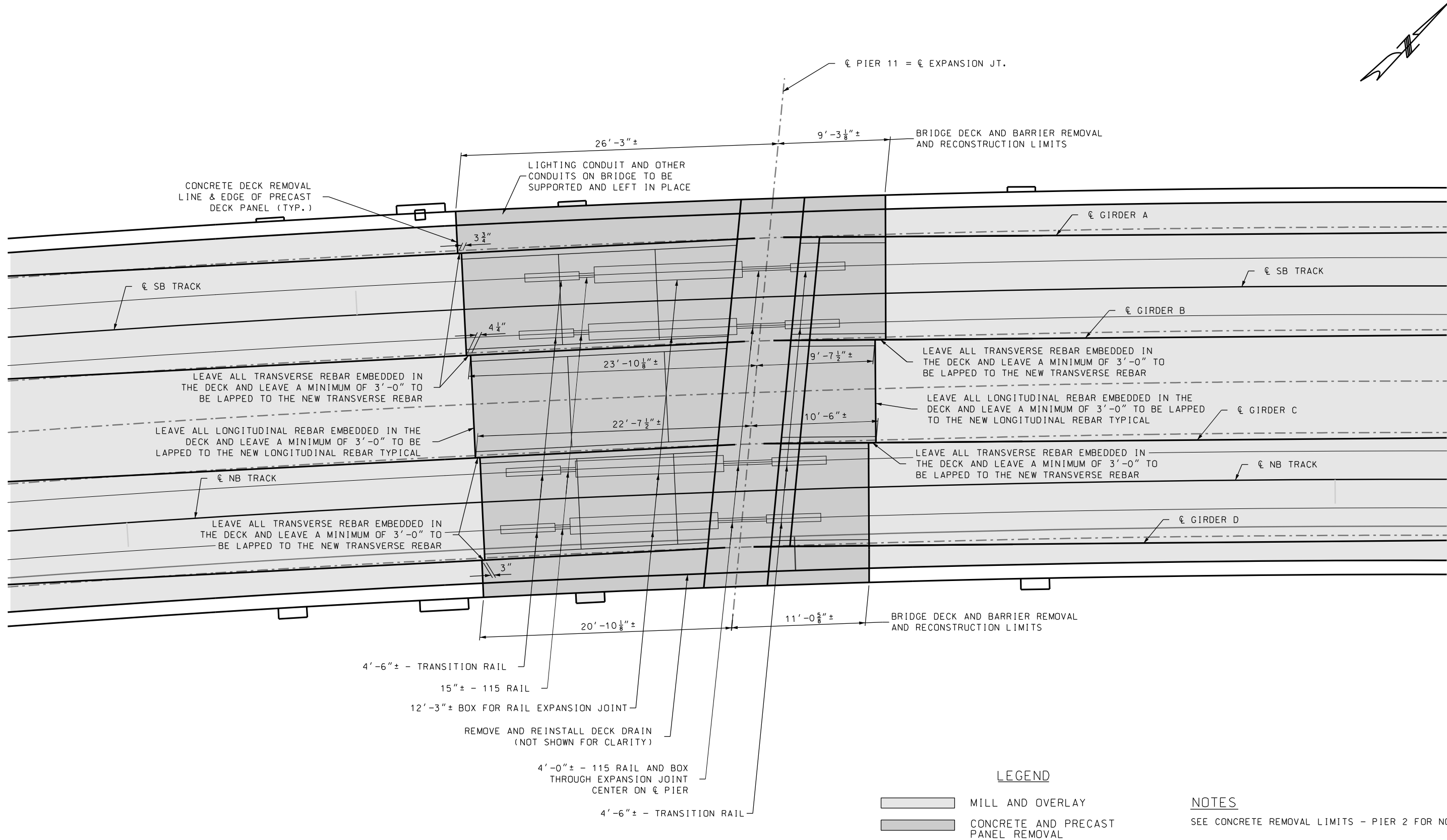


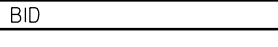
ISSUED FOR BID		DATE: 12-23-2022
 HDR HDR Engineering, Inc.		
10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		HG Consult, Inc. 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4729 Certificate of Authority: 2010005873
NOT FOR CONSTRUCTION		

2 **KANSAS CITY STREETCAR - RIVERFRONT EXTENSION** 50

**BID ALTERNATE – 115RE JOINTS
CONCRETE REMOVAL LIMITS - PIER 8**

SCALE FOR 22"x34":	
FILENAME: II5_ST304.ConcRem_Pier08.dgn	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
I	
DRAWING NO.:	SHEET NO.:
ST304	298

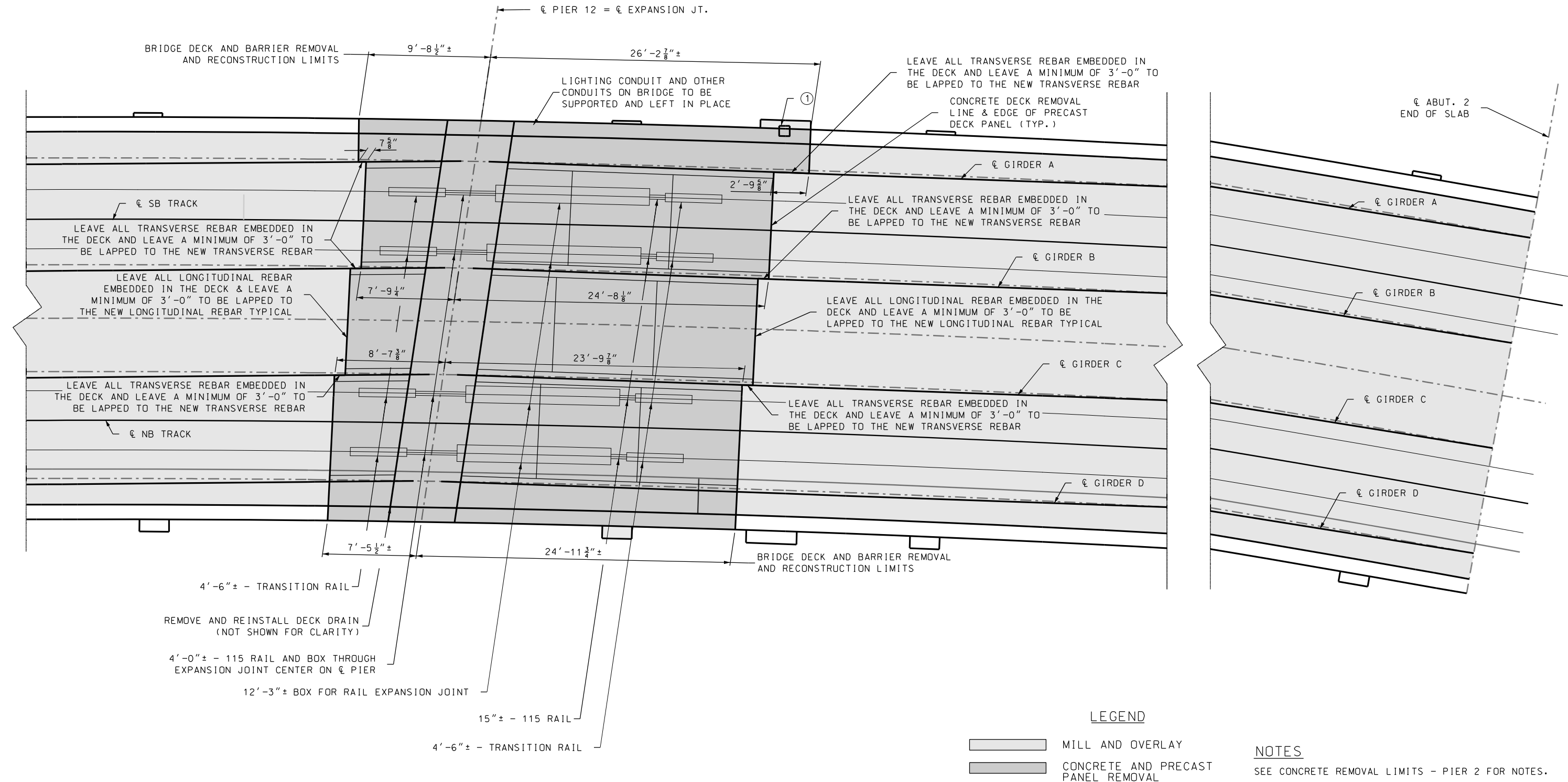
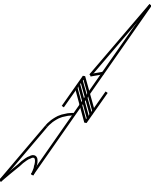


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									CHECKED BY			TH					HDR Engineering, Inc.						HQ Consult, Inc.						BID ALTERNATE – 115RE JOINTS CONCRETE REMOVAL LIMITS - PIER 11												FILENAME: 05_ST305_ConcRem_Pier11.dgn				
									DRAWN BY			BW/BS					10450 Holmes Road						7733 N. Wallace Ave.																		CONTRACT NO.:				
												Kansas City, MO 64131-3471						Kansas City, MO 64158						CONTRACT NO. ***																					
												816-360-2700						816-912-4720						VOLUME:																					
												Certificate of Authority: 000856						Certificate of Authority: 2010005873						1																					
									CHECKED BY			TW/TH																	DRAWING NO.:												SHEET NO.:				
									APPROVED BY			CDH															ST305												299						
PLOT DATE: 12/22/2022												DATE			12-23-2022			TERENCE A. HOOD - ENGINEER LICENSE NO. 2014030630						NOT FOR CONSTRUCTION																					

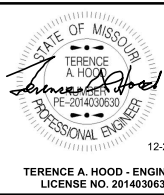
① CONTRACTOR TO REMOVE EXISTING STREET POLE LIGHT LOCATED AT THE BARRIER OF THE BRIDGE AND REMOVE ALL EXISTING WIRES CONNECTED TO EXISTING STREET POLE. CONTRACTOR TO STORE THE EXISTING STREET LIGHT POLE AND RE-INSTALL THE EXISTING STREET LIGHT POLE AFTER THE BARRIER IS RECONSTRUCTED ON THE BRIDGE.

OTHER LIGHTS ON BRIDGE MUST REMAIN OPERATIONAL EVEN WHEN THESE LIGHTS ARE REMOVED.

CONTRACTOR TO INSTALL ALL NEW WIRES FOR THE STREET LIGHT POLE AND REPAIR ANY EXISTING CONDUIT CONNECTED TO THE STREET LIGHT POLE. CONTRACTOR TO ENSURE THE EXISTING STREET LIGHT POLE IS WORKING PROPERLY AFTER INSTALLATION.



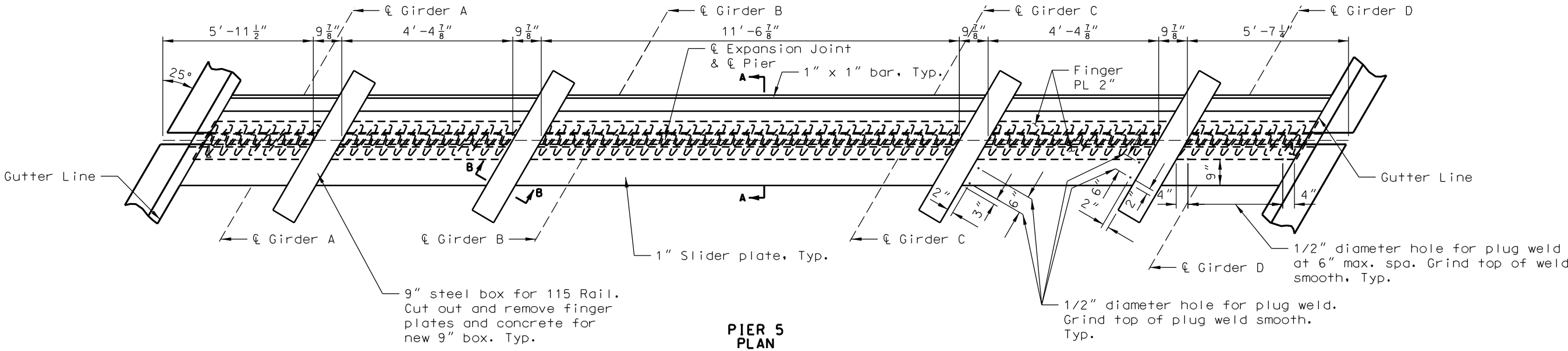
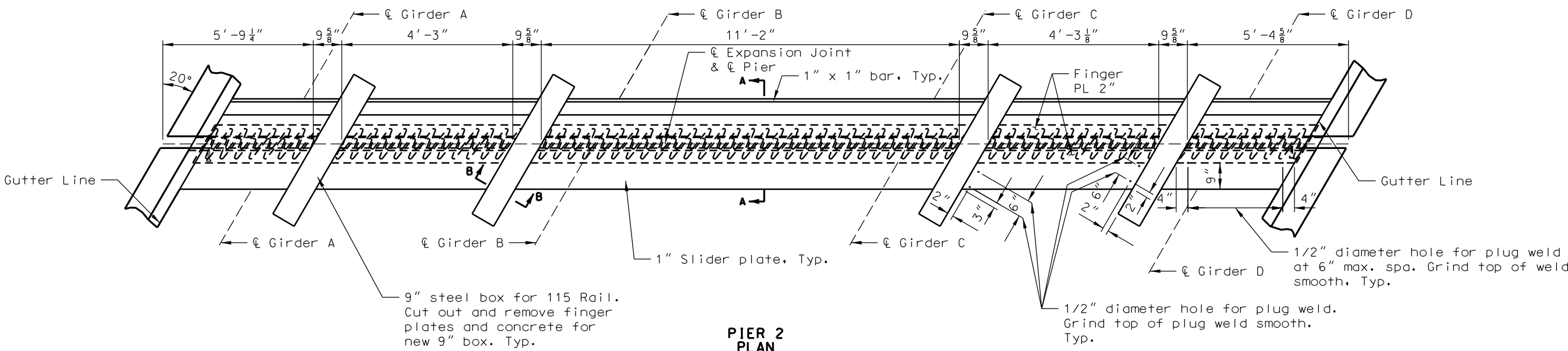
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																		SHEET NO.:
																		ST306 300
PLOT DATE: 12/22/2022 5:20:00 PM														NOT FOR CONSTRUCTION				



HDR
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

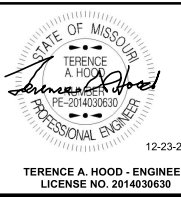
DATE: 12-23-2022
HG Consult Inc
7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

BID ALTERNATE – 115RE JOINTS
CONCRETE DECK REMOVAL LIMITS - PIER 12



Note:
For additional details of finger joint modifications, see section A-A and B-B on ST309.
See ST308 for additional notes.

REV	DATE	DESCRIPTION	DESIGNED BY	TW	DATE	12-23-2022	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	TH						FILENAME:
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			APPROVED BY	CDH						VOLUME:
										DRAWING NO.:
										SHEET NO.:
										ST307 301
PLOT DATE: 12/22/2022			5:20:03 PM		DATE 12-23-2022		NOT FOR CONSTRUCTION			



HDR Engineering, Inc.

10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

DATE: 12-23-2022

12-23-2022

TERENCE A. HOOD - ENGINEER
LICENSE NO. 2014030630

HG Consult Inc.

7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

**BID ALTERNATE – 115RE JOINTS
MODIFIED FINGER JOINT PLAN PIERS 2 AND 5**



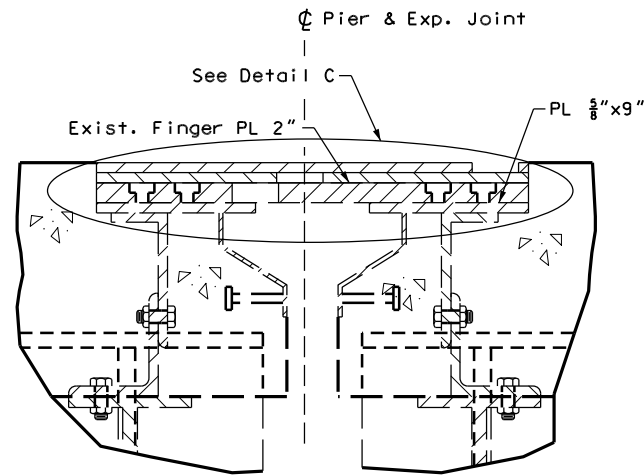
Plan dimensions are based on installation at 60°F. The expansion gap and other dimensions shall be increased or decreased $\frac{1}{4}$ " for each 10° fall or rise in temperature at installation.

Structural steel for the new bar and plate shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123.

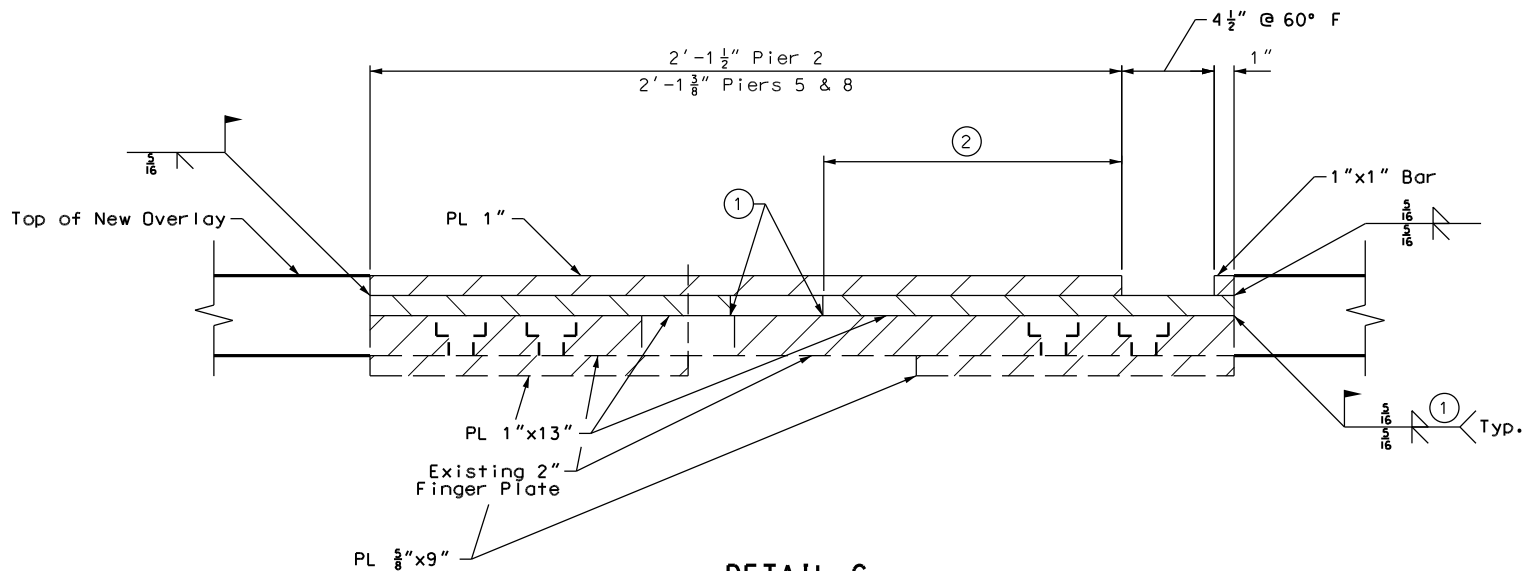
Payment for furnishing, coating or galvanizing and installing the structural steel for the modifications and removal of the existing 2" finger plates will be considered completely covered by the contract unit price for finger joint modifications.

Notes:
For Sections A-A & B-B see ST309.

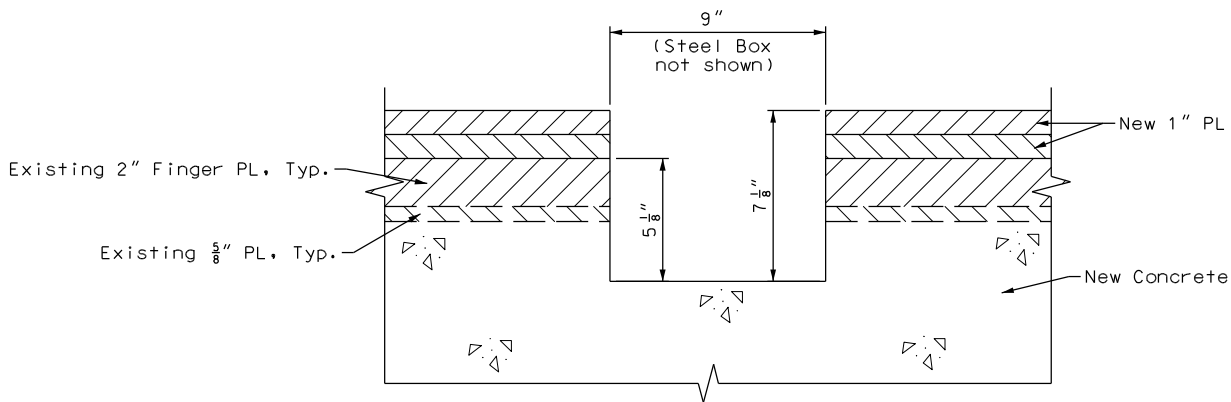
REV	DATE	DESCRIPTION	DESIGNED BY	TW	 	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION BID ALTERNATE – 115RE JOINTS MODIFIED FINGER JOINT PLAN PIER 8	SCALE FOR 22"x34":
			CHECKED BY	TH		 HDR Engineering, Inc.	 HG Consult, Inc.		FILENAME:
			DRAWN BY	BW/B5		10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-380-2700 Certificate of Authority: 000856	7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873		I15_ST308_FngtPlan_Pier08.dgn
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			APPROVED BY	CDH					CONTRACT NO. ***
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PLOT DATE: 12/22/2022			5:20:05 PM		DATE 12-23-2022	NOT FOR CONSTRUCTION			DRAWING NO.: ST308
									SHEET NO.: 302



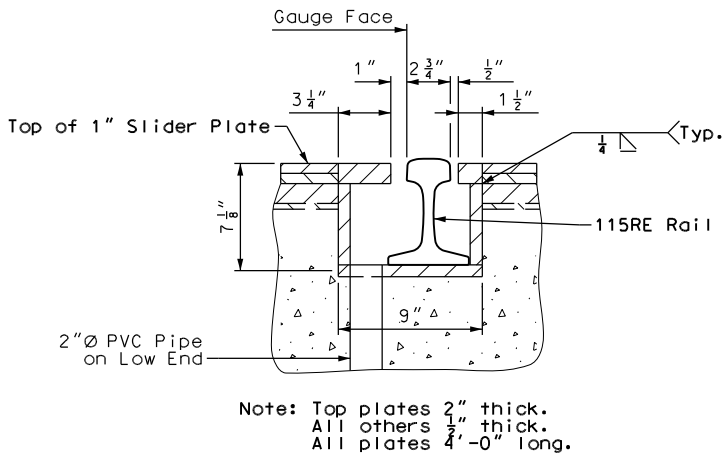
SECTION A-A @ PIERS 2, 5 & 8



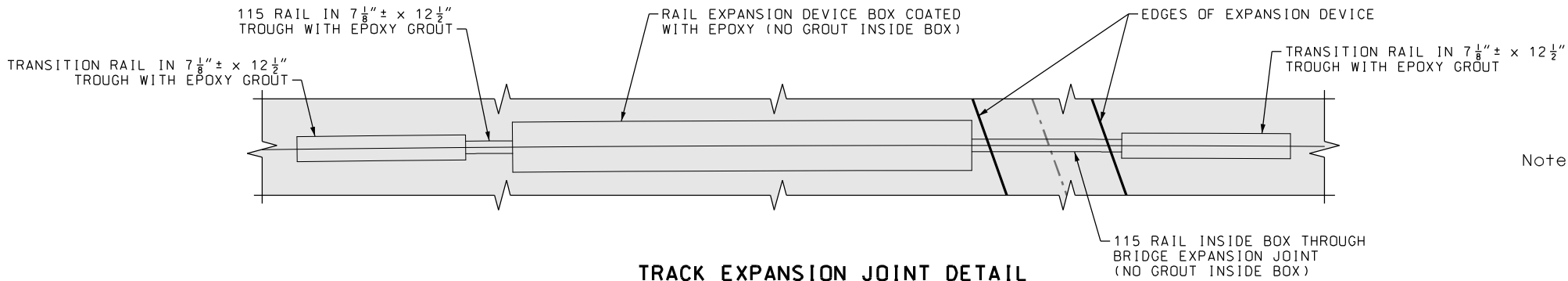
- ① Weld new 1" Plates to existing 2" finger plates as shown.
- ② Sliding area between new 1" plates.



SECTION B-B

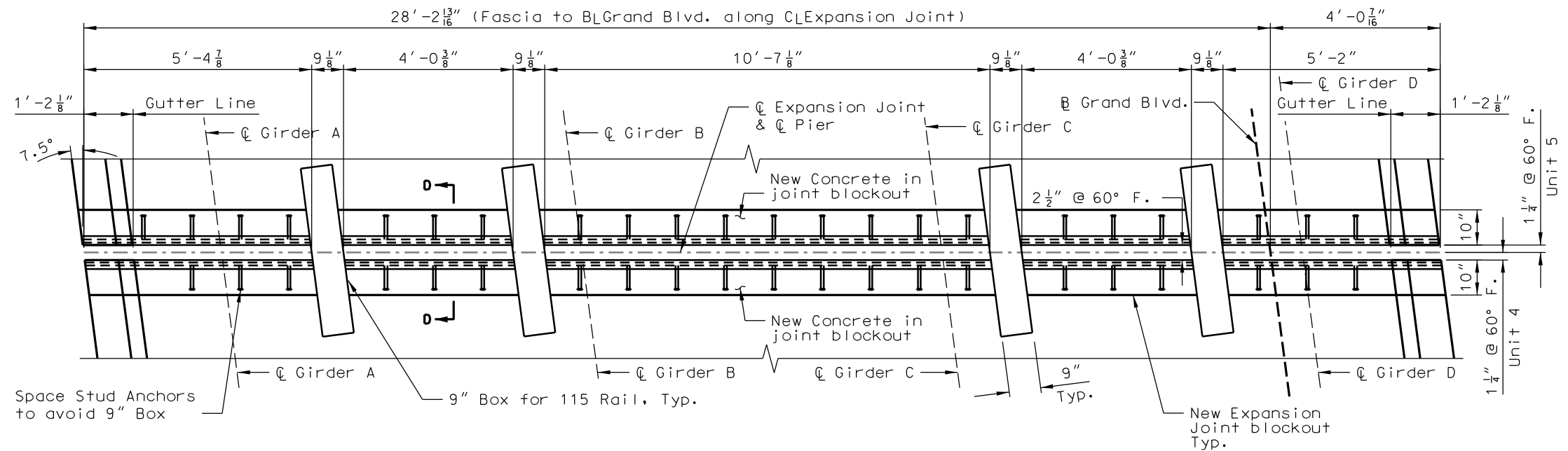


SECTION OF BOX THRU BRIDGE EXPANSION JOINT

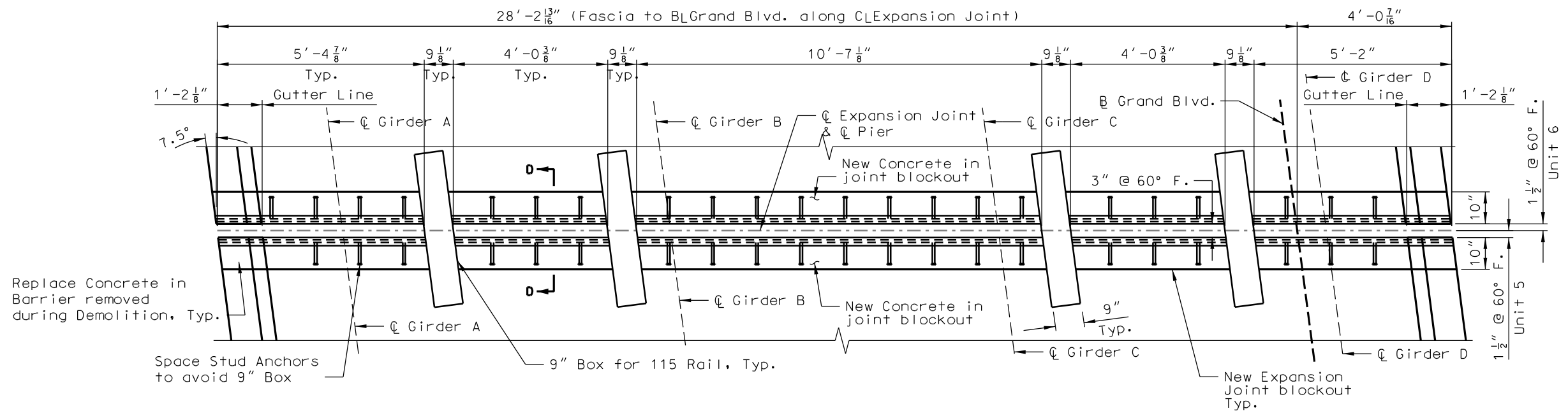


Notes:
For locations of Section A-A and B-B,
See ST307 & ST308

REV	DATE	DESCRIPTION	DESIGNED BY	TW	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NO SCALE, FOLLOW DIMENSIONS
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			DRAWN BY	BW/BS	7733 N. Wallace Ave.	HG Consult Inc	FINGER JOINT	CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	TW/TH	Kansas City, MO 64131-3471	7733 N. Wallace Ave.	MODIFICATION DETAILS	VOLUME: DRAWING NO.: SHEET NO.:
			APPROVED BY	CDH	816-360-2700	816-912-4720		ST309 303
PLOT DATE: 12/22/2022			DATE 12-23-2022		NOT FOR CONSTRUCTION			



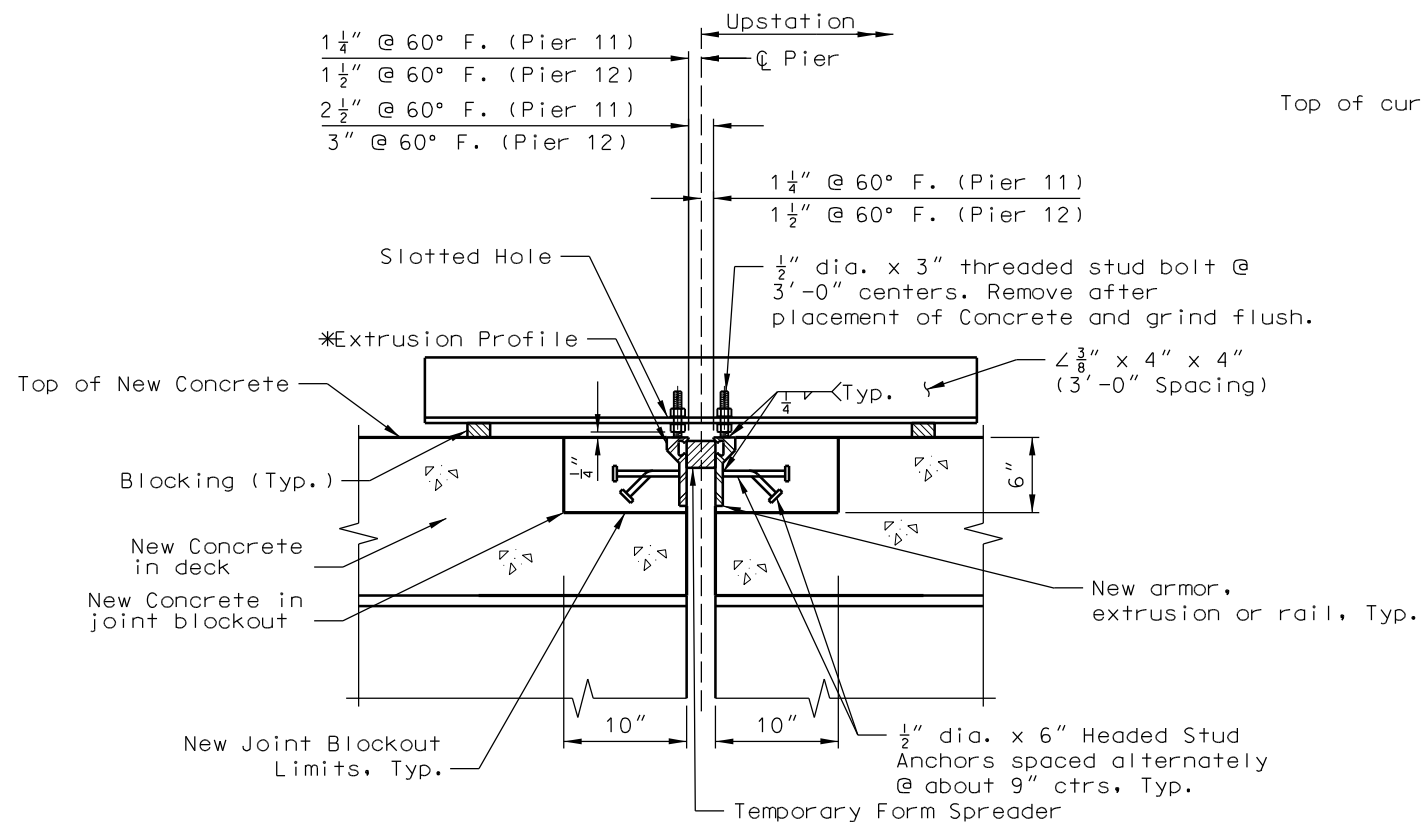
PIER 11
PLAN



PIER 12
PLAN

Notes:
See ST311 for Sections D-D and additional Strip Seal details.
The new concrete placed shall be Special Aggregate Concrete in accordance with the project manual.

REV	DATE	DESCRIPTION	DESIGNED BY	TW	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	TH	HDR	HDR Engineering, Inc.	BID ALTERNATE – 115RE JOINTS	FILENAME:
			DRAWN BY	BW/BS	10450 Holmes Road	7733 N. Wallace Ave.	STRIP SEAL PLAN PIERS 11 AND 12	05-ST310-StripSealPlan_Pier11-12.dgn
			CHECKED BY	TW/TH	Suite 600	Kansas City, MO 64158		CONTRACT NO.:
			APPROVED BY	CDH	816-360-2700	816-912-4720		CONTRACT NO. ***
					Certificate of Authority: 000856	Certificate of Authority: 2010005873		VOLUME:
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								ST310 304

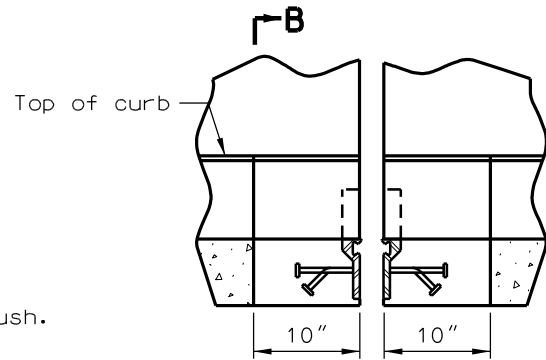


* Use a profile without a horizontal leg.

Note: The 4"x 4" angle, blocking, form spreader and threaded stud bolt will be removed and the new gland installed after the new concrete has cured.

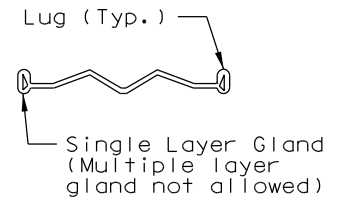
SECTION D-D

(NEW STRIP SEAL INSTALLATION DETAIL)

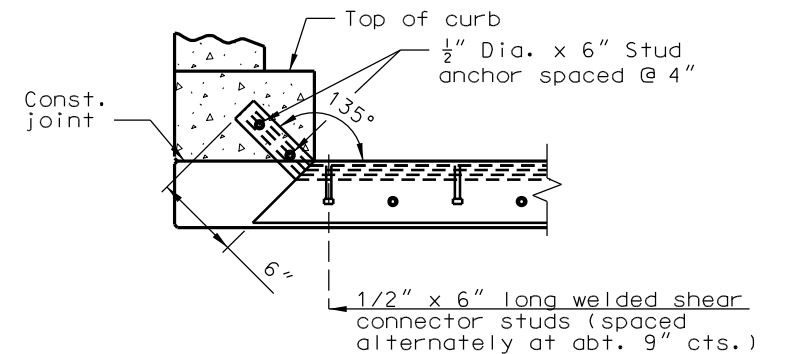


PART ELEVATION OF BARRIER

Strip seal gland not shown for clarity.



DETAIL OF GLAND



PART SECTION B-B

GENERAL NOTES:

Structural steel for the expansion joint system shall be ASTM A709 Grade 36 except the steel armor may be ASTM A709 Grade 50W. Anchors for the expansion joint system shall be in accordance with MoDOT Sec 1037. Strip seal expansion joint system shall be in accordance with MoDOT Sec 717.

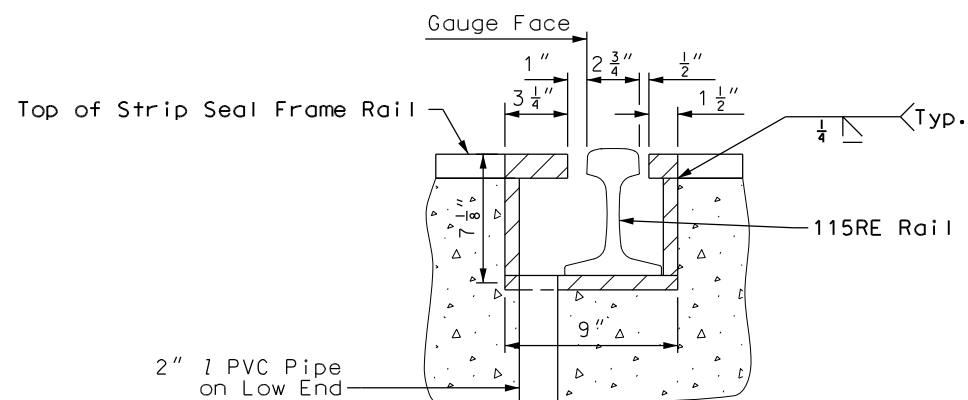
Structural steel for the expansion joint system shall be coated with a minimum of two coats of inorganic zinc primer to provide a total dry film thickness of 4 mils minimum, 6 mils maximum, or galvanized in accordance with ASTM A123. Anchors need not be protected from overspray.

Concrete shall be forced under and around steel armor and anchors. Proper consolidation of the concrete shall be achieved by localized internal vibration.

The installation temperature shall be taken as the actual air temperature averaged over the 24-hour period immediately preceding installation. The gap is based on a temperature of 60 degrees F, measured perpendicular to C Expansion Joint. For every 10 degrees F, increase in temperature, the gap width shall be reduced 1/8". For every 10 degree F, decrease in temperature, the gap shall be increased by 1/8".

Steel armor may also be referred to as extrusion or rail.

The concrete placed around the new strip seal blackout and deck shall be Concrete (Bridge) per the Project Manual. The concrete for the new portion of the deck will be placed with a blackout for the new expansion joint. After the deck concrete has cured the new expansion joint will be set and concrete will be placed around the new expansion joint in the blackout.

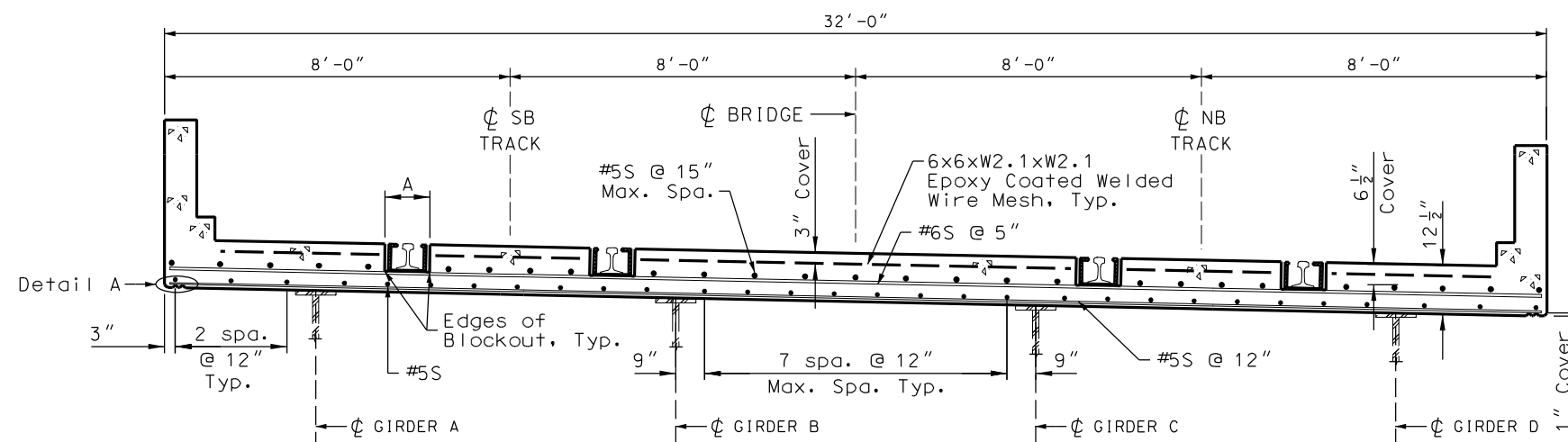
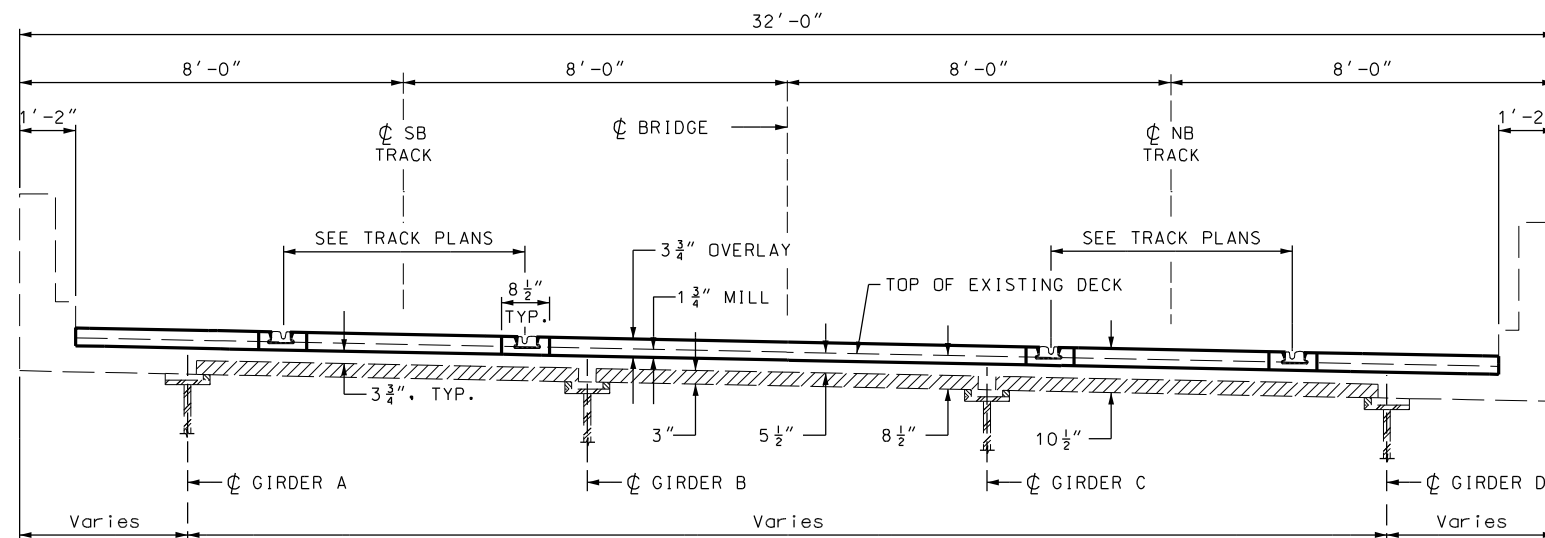


Note: Top plates 2" thick.
All others 1/2" thick.
All plates 4'-0" long.

SECTION OF BOX THRU EXPANSION JOINT

Notes:
For locations of Section D-D, See ST310

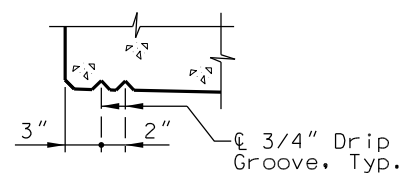
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			CHECKED BY	TH	HDR	HDR Engineering, Inc.	BID ALTERNATE – 115RE JOINTS	FILENAME:
			DRAWN BY	BW/BS	10450 Holmes Road	7733 N. Wallace Ave.	STRIP SEAL DETAILS	05-ST310-StripSealDetails.dgn
			CHECKED BY	TW/TH	Suite 600	Kansas City, MO 64158		CONTRACT NO.:
			APPROVED BY	CDH	816-360-2700	816-912-4720		CONTRACT NO. ***
					Certificate of Authority: 000856	Certificate of Authority: 2010005873		VOLUME:
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								SHEET NO.:
								ST311 305



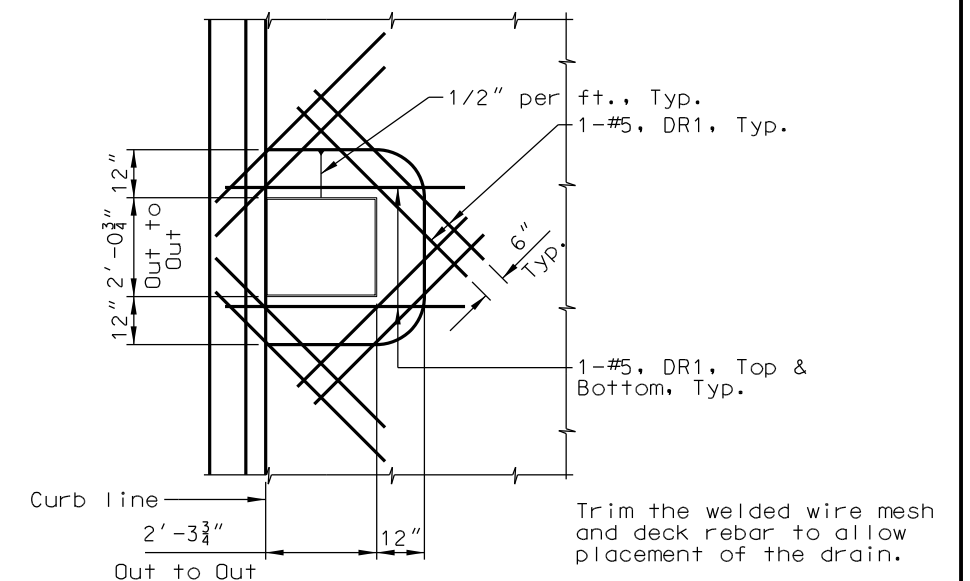
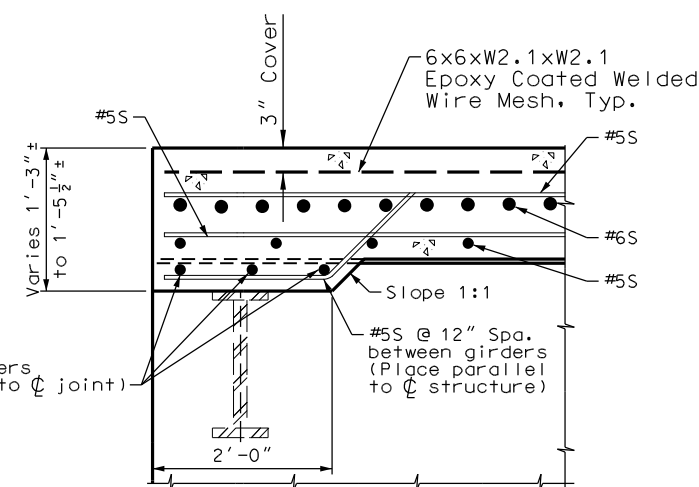
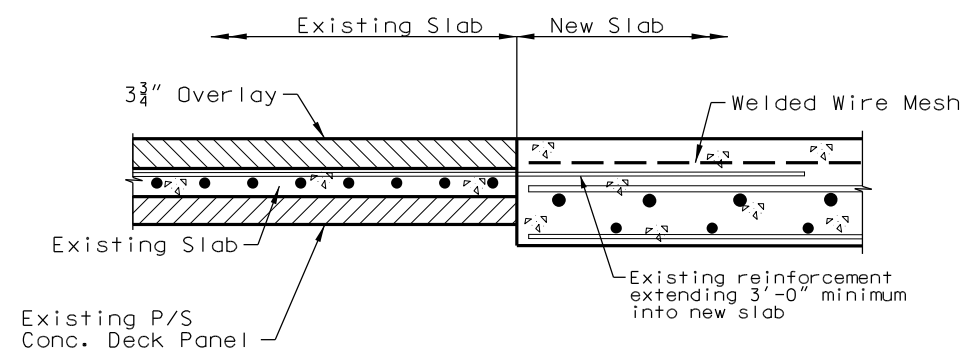
Barrier Reinforcing Steel
Not Shown for Clarity. See
ST321 - ST331 for details.

Notes:

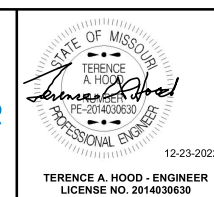
There shall be two inches of clearance from the edge of the welded wire fabric to the edge of slab, blackout and gutter.



A - 12 $\frac{1}{2}$ " x 7 $\frac{1}{8}$ " blockout along rail expansion joint except at the bridge expansion joints. 8 $\frac{1}{2}$ " x 3 $\frac{3}{4}$ " blockout along 112 rail.

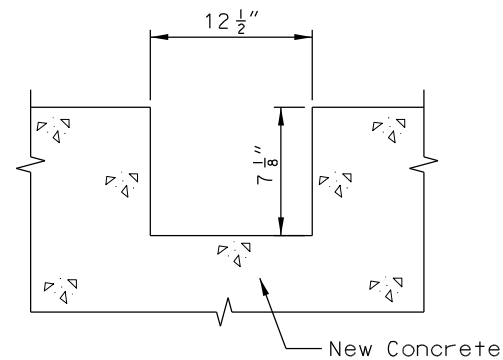


REV	DATE	DESCRIPTION	DESIGNED BY	TW
			CHECKED BY	TH
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PLOT DATE: 12/22/2022			5:20:15 PM	DATE 12-23-2022

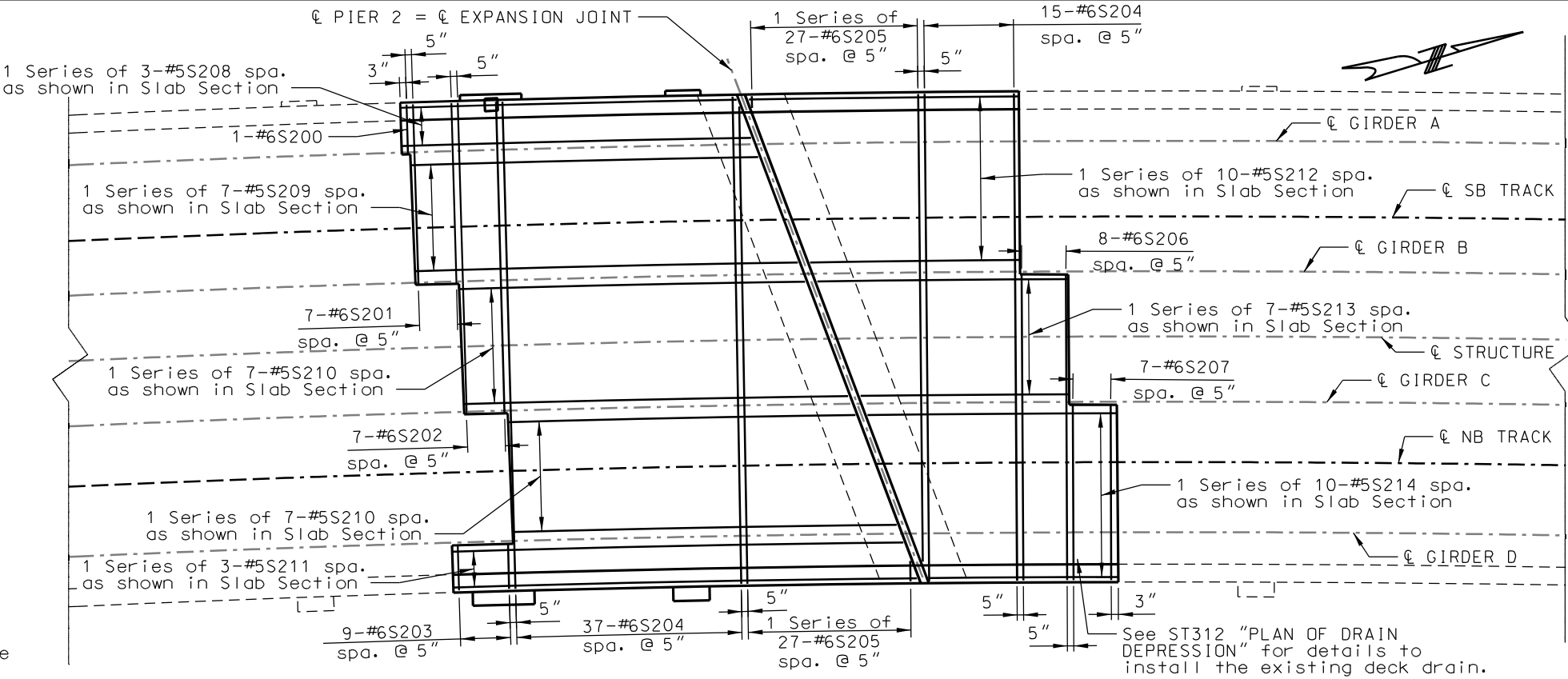


ISSUED FOR BID		DATE: 12-23-2021
 HDR Engineering, Inc.		
10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-390-2700 Certificate of Authority: 000856		HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-812-4720 Certificate of Authority: 201000587
NOT FOR CONSTRUCTION		

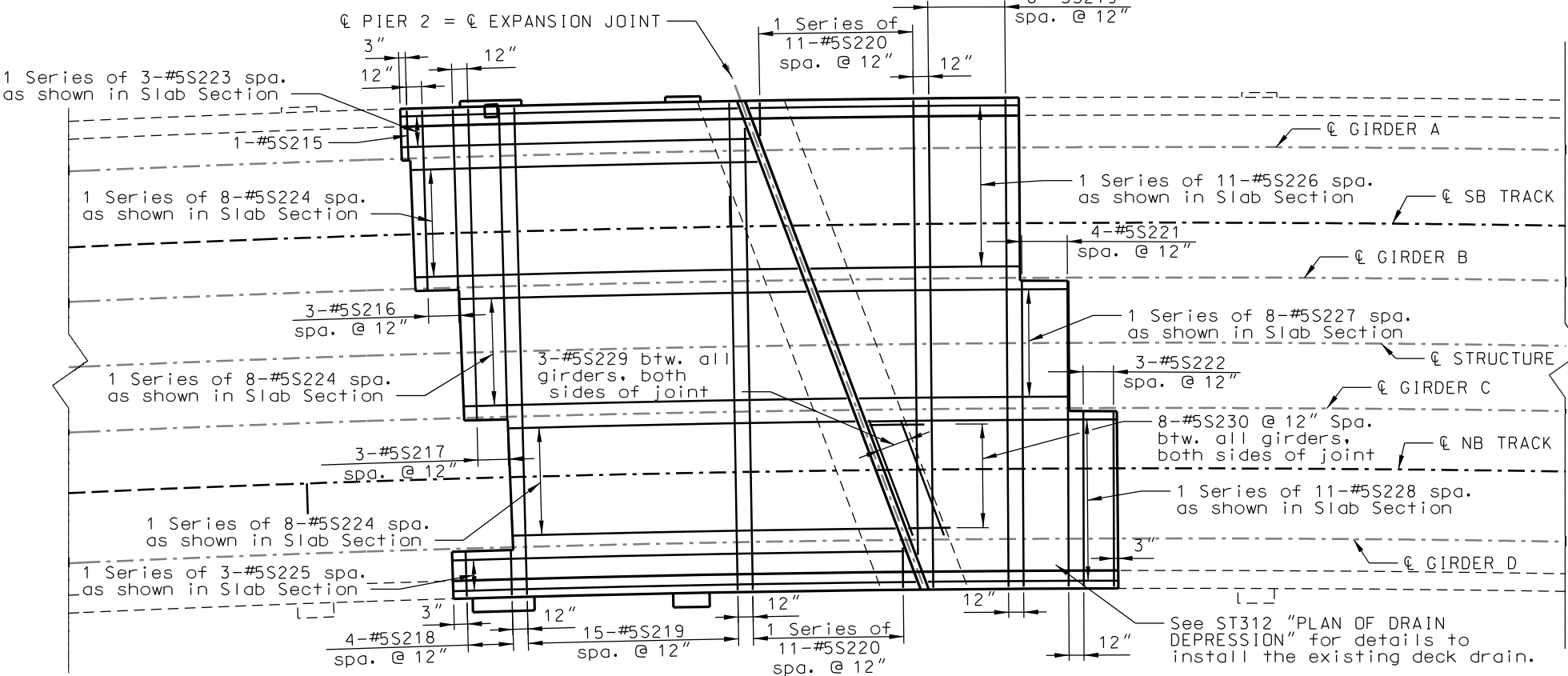
2	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34":	
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			CONTRACT NO.: CONTRACT NO. ***	
			VOLUME: I	
73			DRAWING NO.: ST312	SHEET NO.: 306



**CONCRETE BLOCKOUT DETAIL
AT RAIL JOINT**
(Center Blockout on Rail)
(All New Sections of Slab)



MIDDLE REINFORCING

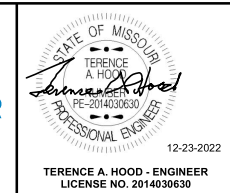


BOTTOM REINFORCING

Notes:
See the track plans for the
limits of the rail joints and
112 rail.

REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		

DESIGNED BY	TW
CHECKED BY	TH
DRAWN BY	BW/BS
CHECKED BY	TW/TH
APPROVED BY	CDH
DATE	12-23-2022

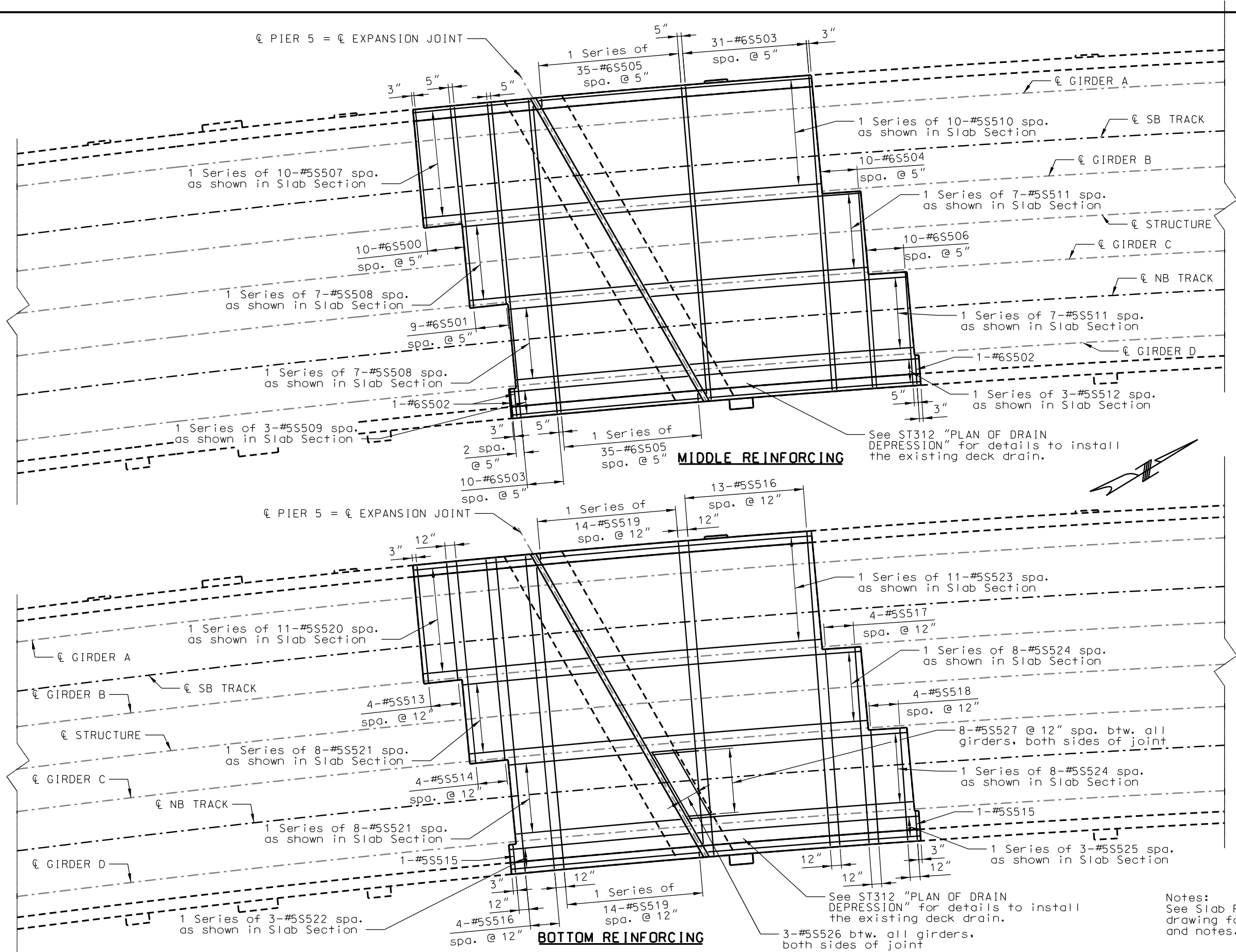


ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
HG Consult Inc. 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

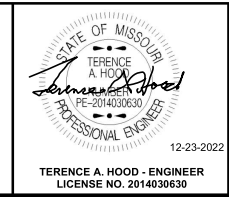
BID ALTERNATE – 115RE JOINTS
SLAB REINFORCING - PIER 2

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CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.:	SHEET NO.:
ST313	307



REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		

DESIGNED BY	TW
CHECKED BY	TH
DRAWN BY	BW/BS
CHECKED BY	TW/TH
APPROVED BY	CDH
DATE	12-23-2022



ISSUED FOR BID

DATE: 12-23-2022

HDR HDR Engineering, Inc.

10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

HG Consult Inc.
7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

NOT FOR CONSTRUCTION

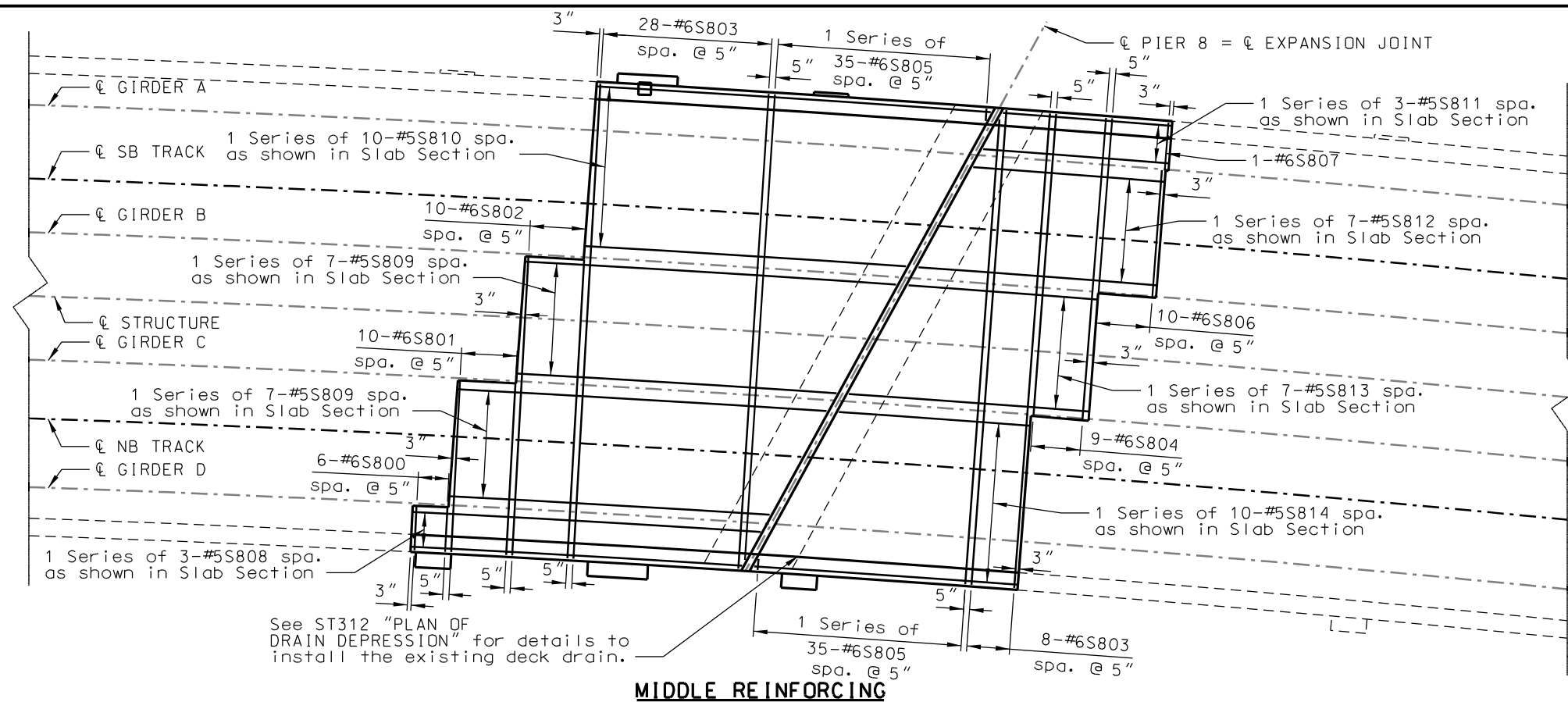
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

BID ALTERNATE - 115RE JOINTS
SLAB REINFORCING - PIER 5

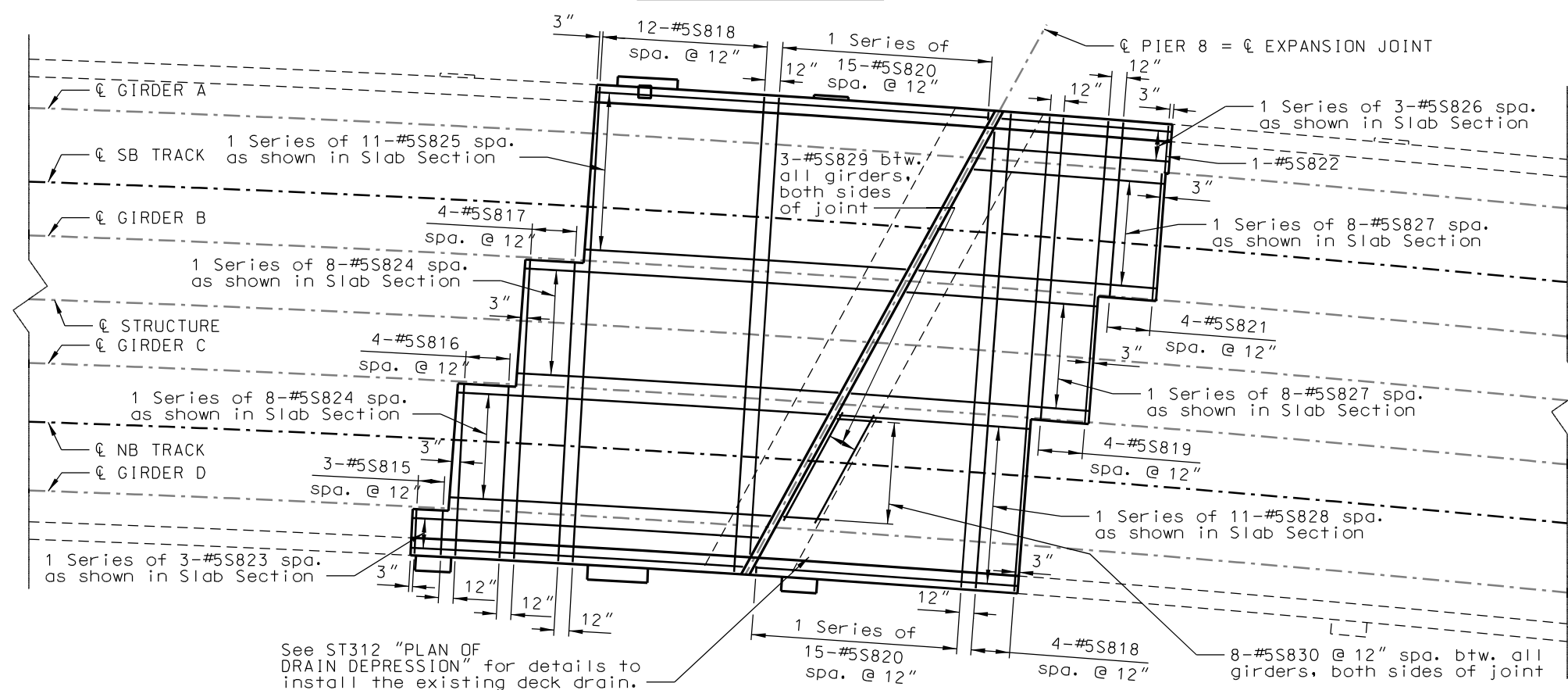
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CONTRACT NO.:
CONTRACT NO. ***
VOLUME: 1

DRAWING NO.: ST314 SHEET NO.: 308



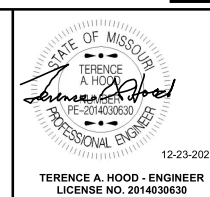
MIDDLE REINFORCING



BOTTOM REINFORCING

Notes:
See Slab Reinforcing Pier 2
drawing for additional details
and notes.

REV	DATE	DESCRIPTION	DESIGNED BY	TW
			CHECKED BY	TH
			DRAWN BY	BW/BS
			CHECKED BY	TW/TH
			APPROVED BY	CDH
PLOT DATE: 12/22/2022			5:20:26 PM	DATE 12-23-2022

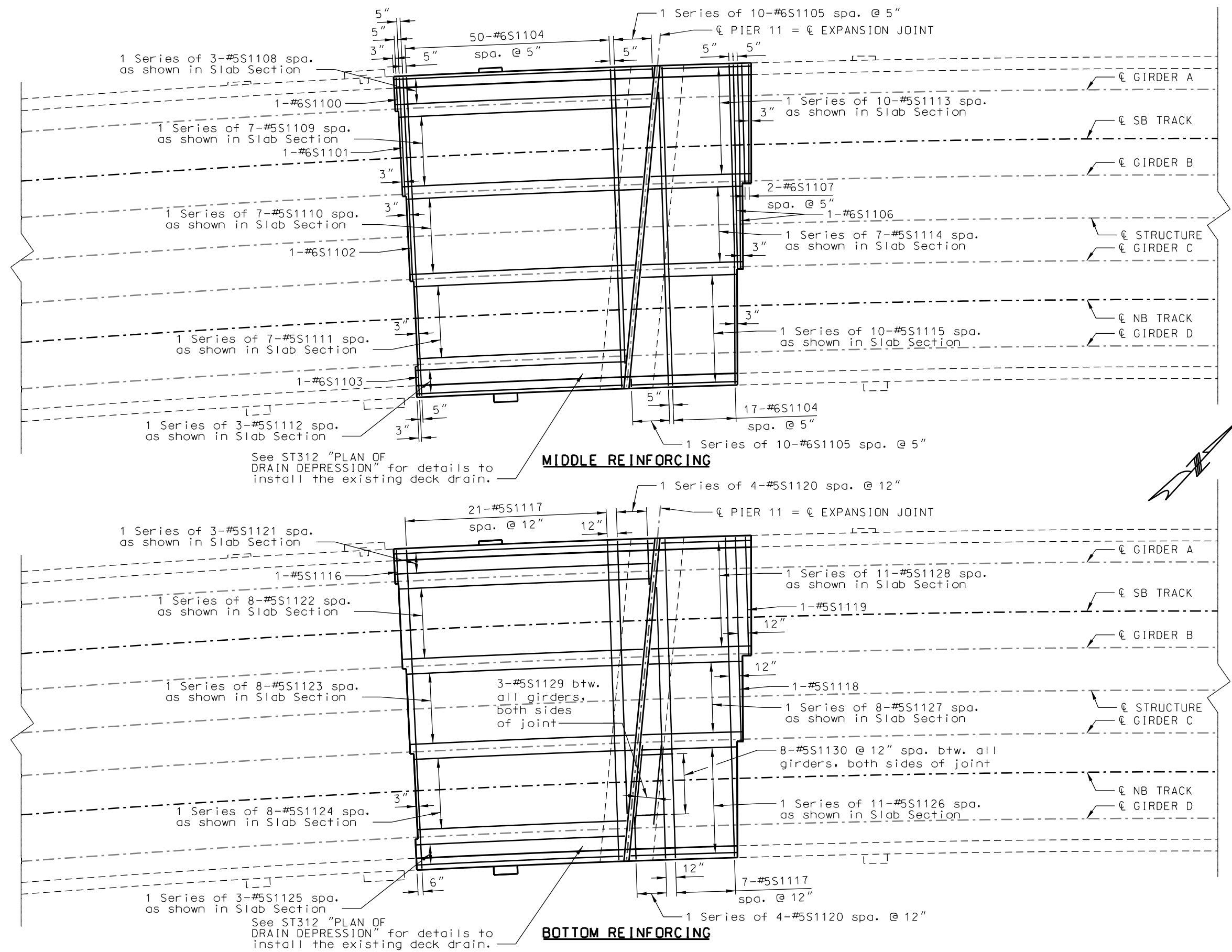


ISSUED FOR BID		DATE: 12-23-2022
 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		 HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-612-4722 Certificate of Authority: 2010005873
NOT FOR CONSTRUCTION		

2 KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

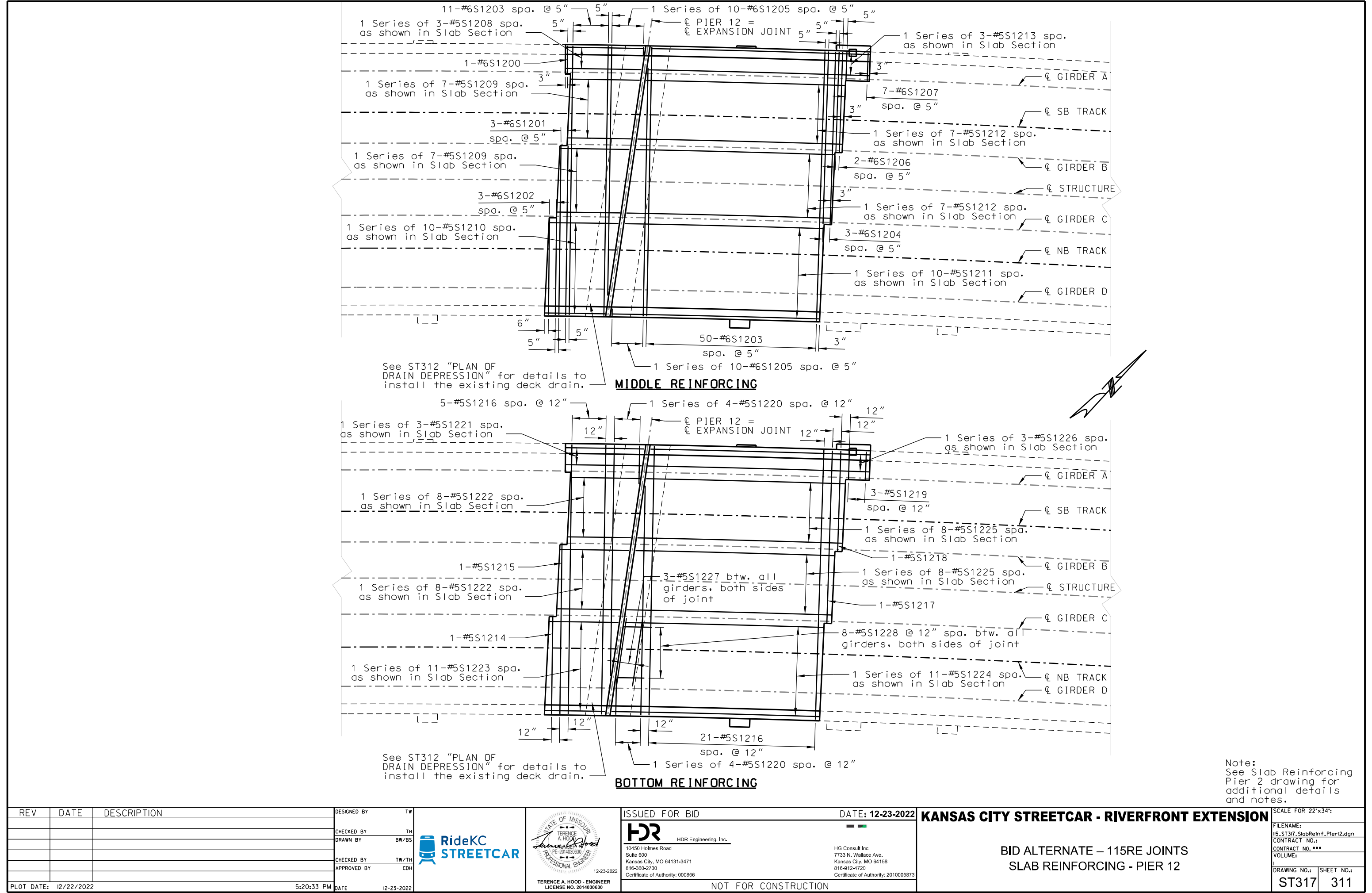
BID ALTERNATE – 115RE JOINTS
SLAB REINFORCING - PIER 8

SCALE FOR 22"x34":	
FILENAME: IIS_ST315_SlabReinf_Pter08.dgn	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
I	
DRAWING NO.:	SHEET NO.:
ST315	309



Note:
See Slab Reinforcing
Pier 2 drawing for
additional details
and notes.

REV		DATE	DESCRIPTION	DESIGNED BY	TW			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION			SCALE FOR 22"x34":		
				CHECKED BY	TH						BID ALTERNATE – 115RE JOINTS			FILENAME:		
				DRAWN BY	BW/BS			HDR Engineering, Inc.			SLAB REINFORCING - PIER 11			05-ST316_SlabReinf_Pier11.dgn		
				CHECKED BY	TW/TH			10450 Holmes Road						CONTRACT NO.:		
				APPROVED BY	CDH			Suite 600						CONTRACT NO. ***		
								7733 N. Wallace Ave.						VOLUME:		
								Kansas City, MO 64131-3471						DRAWING NO.:		
								816-360-2700						SHEET NO.:		
								Certificate of Authority: 000856						ST316		
								Certificate of Authority: 2010005873						310		
								NOT FOR CONSTRUCTION								
PLOT DATE: 12/22/2022		5:20:30 PM		DATE	12-23-2022											



REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		5:20:33 PM

DESIGNED BY	TW
CHECKED BY	TH
DRAWN BY	BW/BS
CHECKED BY	TW/TH
APPROVED BY	CDH
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HG Consult Inc. 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

BID ALTERNATE – 115RE JOINTS
SLAB REINFORCING - PIER 12

SCALE FOR 22"x34":	
FILENAME: H5-ST317-SlabReinf-Pier12.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.: ST317	SHEET NO.: 311

BILL OF REINFORCING STEEL																													
NO.	REQ'D.	MARK NO.	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS						NOMINAL	LENGTH	ACTUAL	LENGTH	WEIGHT								
											B		C		D							E		F		H		K	
											FT.	IN.	FT.	IN.	FT.	IN.						FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
PIER 2																													
1	6	S200	MIDDLE TRANS	E	20					3	3.000							3	3	3	5								
7	6	S201	MIDDLE TRANS	E	20					11	9.000							11	9	11	9								
7	6	S202	MIDDLE TRANS	E	20					20	3.000							20	3	20	3								
9	6	S203	MIDDLE TRANS	E	20					2	11.000							2	11	2	11								
52	6	S204	MIDDLE TRANS	E	20					31	9.000							31	9	31	9								
54	6	S205	MIDDLE TRANS	E	20				V	2	31	1.000						31	1	31	1								
											16.000							1	4	1	4								
8	6	S206	MIDDLE TRANS	E	20					19	11.000							19	11	19	11								
7	6	S207	MIDDLE TRANS	E	20					11	5.000							11	5	11	5								
3	5	S208	MIDDLE LONG	E	20				V	1	21	11.000						21	11	21	11								
											21	9.000						21	9	21	9								
7	5	S209	MIDDLE LONG	E	20				V	1	24	11.000						24	11	24	11								
											22	8.000						22	8	22	8								
14	5	S210	MIDDLE LONG	E	20				V	2	25	0.000						25	0	25	0								
											22	6.000						22	6	22	6								
3	5	S211	MIDDLE LONG	E	20				V	1	30	2.000						30	2	30	2								
											29	4.000						29	4	29	4								
10	5	S212	MIDDLE LONG	E	20				V	1	17	7.000						17	7	17	7								
											13	8.000						13	8	13	8								
7	5	S213	MIDDLE LONG	E	20				V	1	16	4.000						16	4	16	4								
											13	7.000						13	7	13	7								
10	5	S214	MIDDLE LONG	E	20				V	1	16	3.000						16	3	16	3								
											12	4.000						12	4	12	4								
1	5	S215	BOTTOM TRANS	E	20					3	3.000							3	3	3	3								
3	5	S216	BOTTOM TRANS	E	20					11	9.000							11	9	11	9								
3	5	S217	BOTTOM TRANS	E	20					20	3.000							20	3	20	3								
4	5	S218	BOTTOM TRANS	E	20					2	11.000							2	11	2	11								
21	5	S219	BOTTOM TRANS	E	20					31	9.000							31	9	31	9								
22	5	S220	BOTTOM TRANS	E	20				V	2	30	1.000						30	1	30	1								
											2	7.000						2	7	2	7								
4	5	S221	BOTTOM TRANS																										

END HOOK DIMENSIONS						
BAR SIZE		D (IN.)	ALL GRADES			
			180° HOOKS		90° HOOKS	
			A OR G	J	A OR G	
#3	2	1 1/4"	5"	3"	6"	
#4	3	3"	6"	4"	8"	
#5	3	3 3/4"	7"	5"	10"	
#6	4	1 1/2"	8"	6"	12"	
#7	5	1 1/4"	10"	7"	14"	
#8	6	6"	11"	8"	16"	
#9	9	1 1/2"	15"	11 3/4"	19"	
#10	10	3 3/4"	17"	13 1/4"	22"	
#11		12"	19"	14 3/4"	27-0"	
#14	18	1 1/4"	23"	21 3/4"	27-1/4"	

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS. REINFORCING STEEL (GRADE 60) $F_y = 60,000$ PSI.

Detailed
Checked

Note: This drawing is not to scale. Follow dimensions.

Sheet No. _____ of _____

DATE: 12-23-2022

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

SCALE FOR 22"x34":

FILENAME:

CONTRACT NO.:

CONTRACT NO. ###
VOLUME:

DRAWING NO.:	SHE
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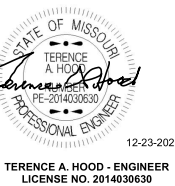
ST318

PLOT DATE: 12/22/2022

5:20:36 F

DATE _____

12-23-2022



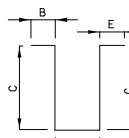
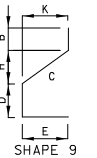
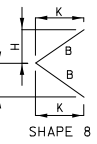
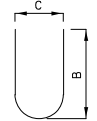
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 00085



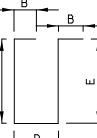
Hog Consult
Inc. engineers
planners

HG Consult Inc
7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

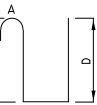
BID ALTERNATE – 115RE JOINTS
REINFORCEMENT BAR LIST



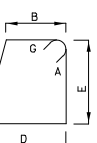
SHAPE 10



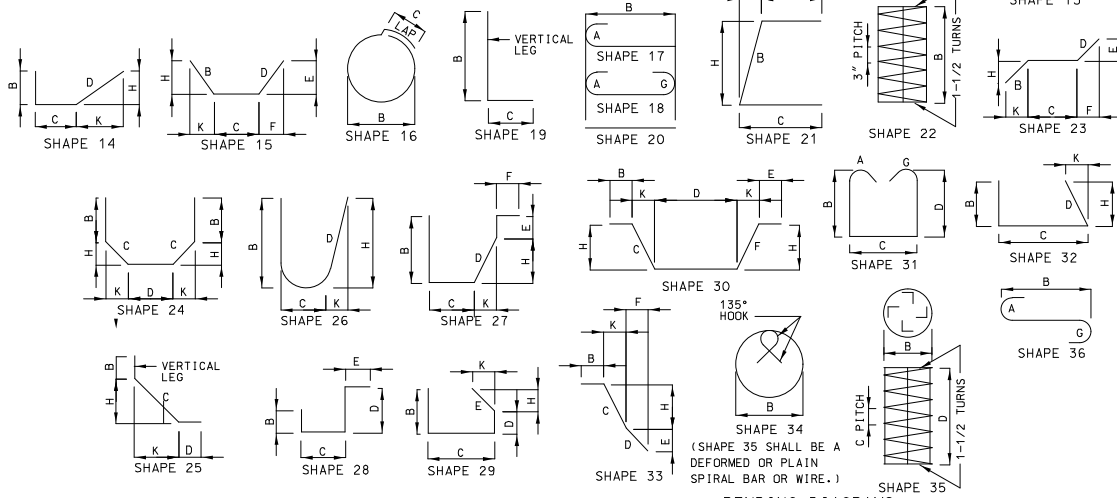
SHAPE 11



SHAPE 12



SHAPE 13



BENDING DIAGRAMS

FILENAME:

CONTRACT NO.:

CONTRACT NO. ###
VOLUME:

DRAWING NO.:	SHE
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ST318

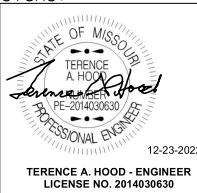
303144

BILL OF REINFORCING STEEL																													
NO.	REQ'D.	MARK NO.	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS						NOMINAL	LENGTH	ACTUAL	LENGTH	WEIGHT								
											B		C		D							E		F		H		K	
											FT.	IN.	FT.	IN.	FT.	IN.						FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.
PIER 8																													
6	6	S800	MIDDLE TRANS	E	20					2	11.000							2	11	2	11		26						
10	6	S801	MIDDLE TRANS	E	20					11	5.000							11	5	11	5		171						
10	6	S802	MIDDLE TRANS	E	20					19	11.000							19	11	19	11		299						
36	6	S803	MIDDLE TRANS	E	20					31	9.000							31	9	31	9		1717						
9	6	S804	MIDDLE TRANS	E	20					20	2.000							20	2	20	2		273						
70	6	S805	MIDDLE TRANS	E	20				V	2	31	2.000						31	2	31	2								
											10.000							0	10		10		1682						
10	6	S806	MIDDLE TRANS	E	20					11	8.000							11	8	11	8		175						
1	6	S807	MIDDLE TRANS	E	20					3	2.000							3	2	3	2		5						
3	5	S808	MIDDLE LONG	E	20				V	1	23	3.000						23	3	23	3								
											22	1.000						22	1	22	1		71						
14	5	S809	MIDDLE LONG	E	20				V	2	24	9.000						24	9	24	9								
											21	5.000						21	5	21	5		337						
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											21	6.000						21	6	21	6		249						
3	5	S811	MIDDLE LONG	E	20				V	1	12	5.000						12	5	12	5								
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											12	8.000						12	8	12	8		105						
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											12	9.000						12	9	12	9		158						
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4	5	S816	BOTTOM TRANS	E	20					11	5.000							11	5	11	5		48						
4	5	S817	BOTTOM TRANS	E	20					19	11.000							19	11	19	11		83						
16	5	S818	BOTTOM TRANS	E	20					31	9.000							31	9	31	9		530						
4	5	S819	BOTTOM TRANS	E	20					20	2.000							2											

END HOOK DIMENSIONS						
BAR SIZE D. (IN.)		ALL GRADES				
		180° HOOKS			90° HOOKS	
		A	R	J	A	R G
#3	2 1/4"	5"	3"	6"	4"	8"
#4	3"	6"	4"	8"	5"	10"
#5	3 3/4"	7"	5"	10"	6"	12"
#6	4 1/2"	8"	6"	12"	7"	14"
#7	5 1/4"	10"	7"	14"	8"	16"
#8	6"	11"	8"	16"	9"	18"
#9	9 1/2"	15"	11 3/4"	19"	12 1/2"	20"
#10	10 3/4"	17"	13 1/4"	22"	14 1/2"	24"
#11	12"	19"	14 3/4"	24"	16"	26"
#14	18 1/4"	27'-33"	21 3/4"	30"	22"	32"

FOUR ANGLE OR CHANNEL SPACERS ARE REQUIRED FOR EACH COLUMN SPIRAL. SPACERS ARE TO BE PLACED ON INSIDE OF SPIRALS. LENGTH AND WEIGHT OF COLUMN SPIRALS DO NOT INCLUDE SPLICES OR SPACERS. REINFORCING STEEL (GRADE 60) $F_y = 60,000$ PSI.

DESIGNED BY	TW
CHECKED BY	TH
DRAWN BY	BW/BS
CHECKED BY	TW/TH
APPROVED BY	CDH
DATE	12-23-2022

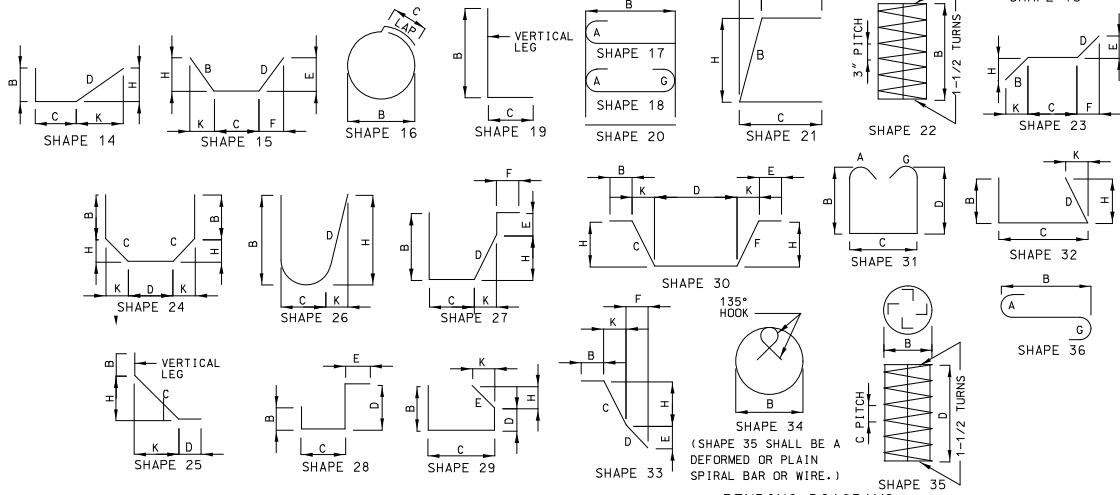


ISSUED FOR BID

HDR HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

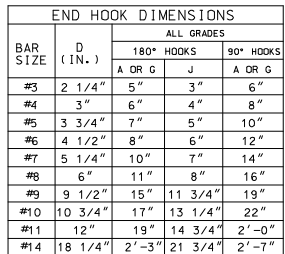
HG Consult Inc
7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

BILL OF REINFORCING STEEL																							
NO.	REQ'D.		MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL	LENGTH	ACTUAL	LENGTH	WEIGHT
	SIZE	MARK									B	C	D	E	F	G	H						
	FT.	IN.	FT.								IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.					
PIER 11 (CONT.)																							
2	6	S1106	MIDDLE TRANS	E	20					20	4.000							20	4	20	4	61	
2	6	S1107	MIDDLE TRANS	E	20					11	10.000							11	10	11	10	36	
3	5	S1108	MIDDLE LONG	E	20			V	1	25	10.000							25	10	25	10		
										25	5.000							25	5	25	5	80	
7	5	S1109	MIDDLE LONG	E	20			V	1	25	0.000							25	0	25	0		
										24	0.000							24	0	24	0	179	
7	5	S1110	MIDDLE LONG	E	20			V	1	23	5.000							23	5	23	5		
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7	5	S1111	MIDDLE LONG	E	20			V	1	21	10.000							21	10	21	10		
										20	9.000							20	9	20	9	155	
3	5	S1112	MIDDLE LONG	E	20			V	1	20	10.000							20	10	20	10		
										20	6.000							20	6	20	6	65	
10	5	S1113	MIDDLE LONG	E	20			V	1	10	0.000							10	0	10	0		
										9	0.000							9	0	9	0	99	
7	5	S1114	MIDDLE LONG	E	20			V	1	10	0.000							10	0	10	0		
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10	5	S1115	MIDDLE LONG	E	20			V	1	10	7.000							10	7	10	7		
										9	7.000							9	7	9	7	105	
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										4	3.000							4	3	4	3	134	
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										25	6.000							25	6	25	6	80	
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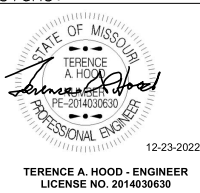
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FILENAME: IIS_ST319_BlllReInf.dgn	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
I	
DRAWING NO.:	SHEET NO.:
ST319	313

BILL OF REINFORCING STEEL																												
NO.	REQ'D.	MARK NO.	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS							NOMINAL	LENGTH	ACTUAL	LENGTH	WEIGHT							
										B		C		D		E						F		H		K		
										FT.	IN.	FT.	IN.	FT.	IN.	FT.						IN.	FT.	IN.	FT.	IN.	FT.	IN.
PIER 12																												
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3	6	S1201	MIDDLE TRANS	E	20				19	11.000							19	11	19	90								
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3	6	S1204	MIDDLE TRANS	E	20				20	4.000							20	4	20	92								
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										7	1.000						7	1	7	80								
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3	5	S1219	BOTTOM TRANS	E	20				3	4.000							3	4	3	10								
8	5	S1220	BOTTOM TRANS	E	20			V	2	27	0.000						27	0	27	0								
										4	3.000						4	3	4	130								
3	5	S1221	BOTTOM LONG	E	20			V	1	9	3.000						9	3	9	3								
										9	0.000						9	0	9	29								

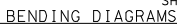


REINFORCING STEEL (GRADE 60) $F_y = 60,000$ PSI.

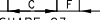
DESIGNED BY	TW
CHECKED BY	TH
DRAWN BY	BW/BS
CHECKED BY	TW/TH
APPROVED BY	CDH
DATE	12-23-2022

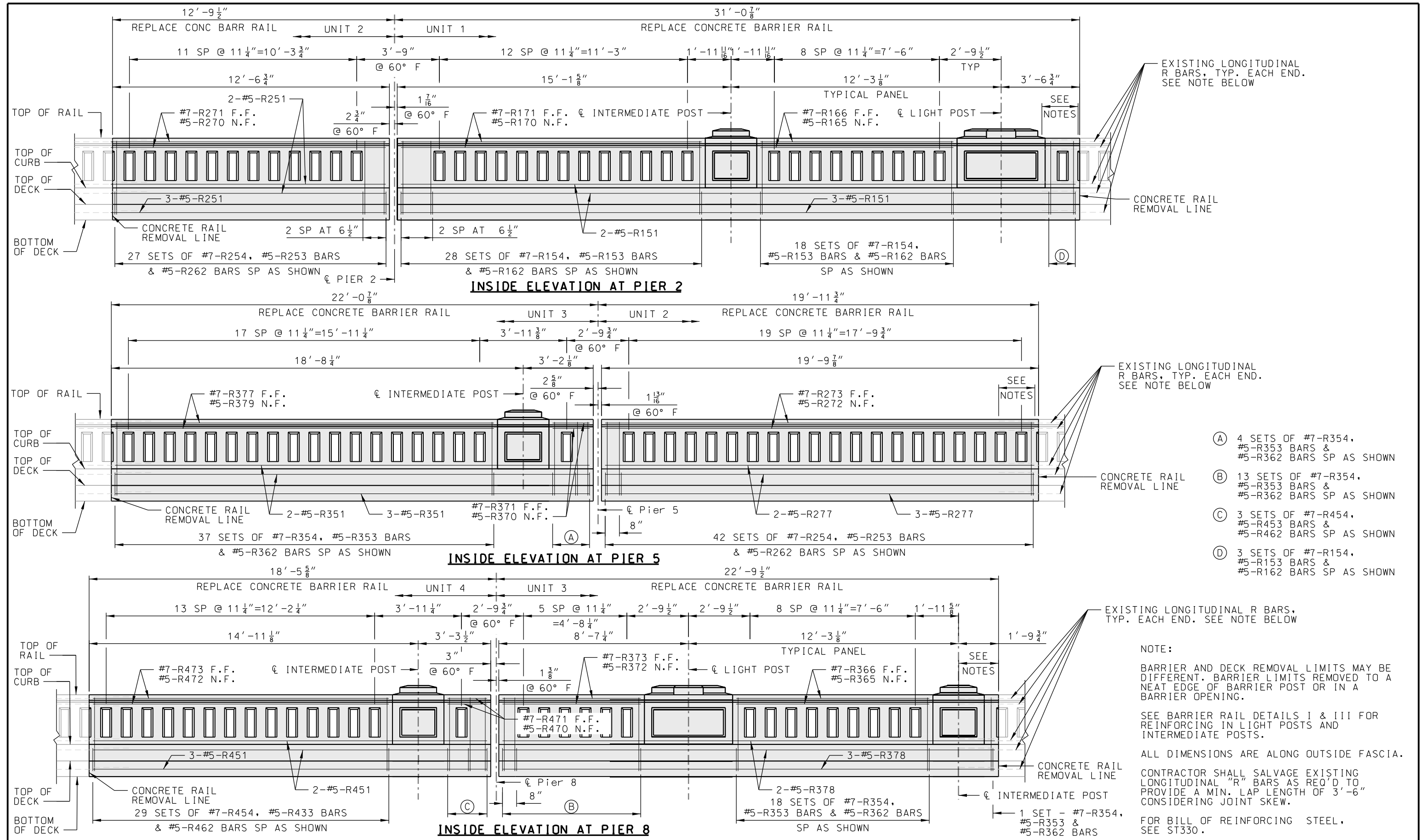


HG Consult Inc
7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

[illegible]

DRAWING NO.:	SHEET NO.:
ST320	314

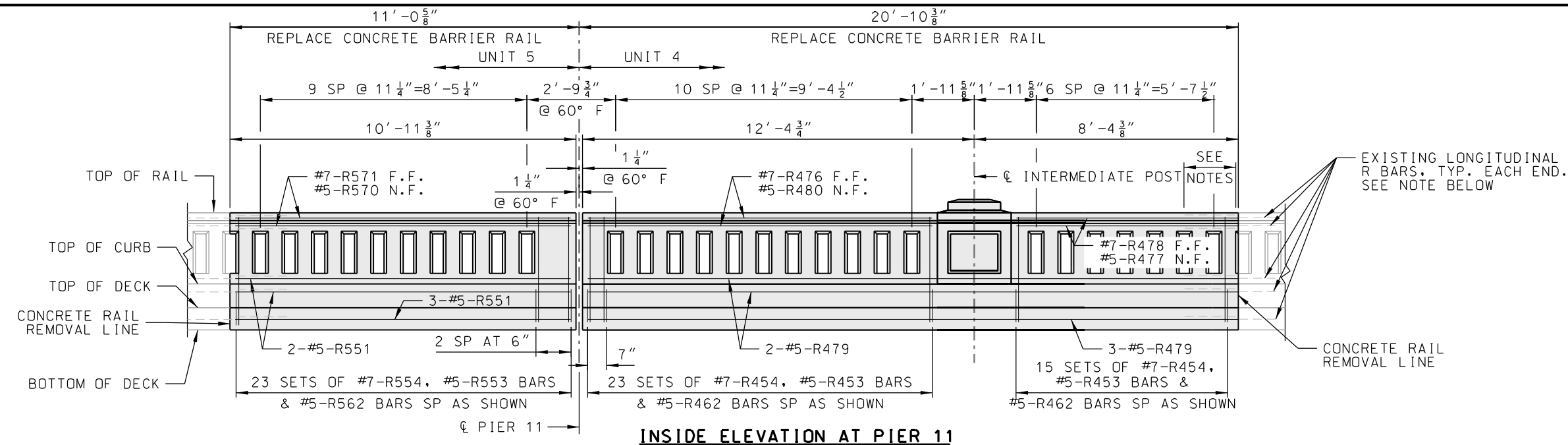




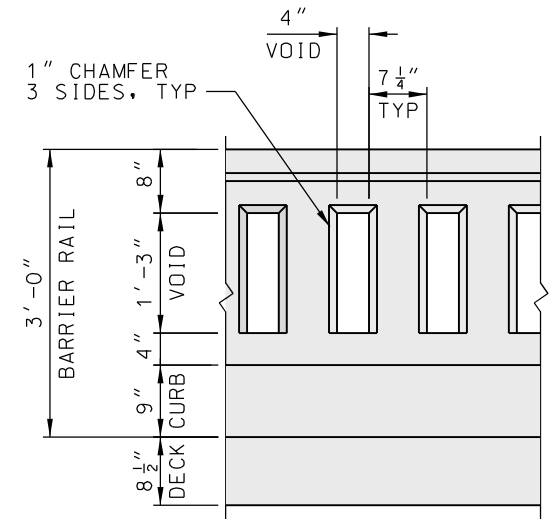
- (A) 4 SETS OF #7-R354, #5-R353 BARS & #5-R362 BARS SP AS SHOWN
- (B) 13 SETS OF #7-R354, #5-R353 BARS & #5-R362 BARS SP AS SHOWN
- (C) 3 SETS OF #7-R454, #5-R453 BARS & #5-R462 BARS SP AS SHOWN
- (D) 3 SETS OF #7-R154, #5-R153 BARS & #5-R162 BARS SP AS SHOWN

NOTE:
BARRIER AND DECK REMOVAL LIMITS MAY BE DIFFERENT. BARRIER LIMITS REMOVED TO A NEAT EDGE OF BARRIER POST OR IN A BARRIER OPENING.
SEE BARRIER RAIL DETAILS I & III FOR REINFORCING IN LIGHT POSTS AND INTERMEDIATE POSTS.
ALL DIMENSIONS ARE ALONG OUTSIDE FASCIA.
CONTRACTOR SHALL SALVAGE EXISTING LONGITUDINAL "R" BARS AS REQ'D TO PROVIDE A MIN. LAP LENGTH OF 3'-6" CONSIDERING JOINT SKEW.
FOR BILL OF REINFORCING STEEL, SEE ST330.

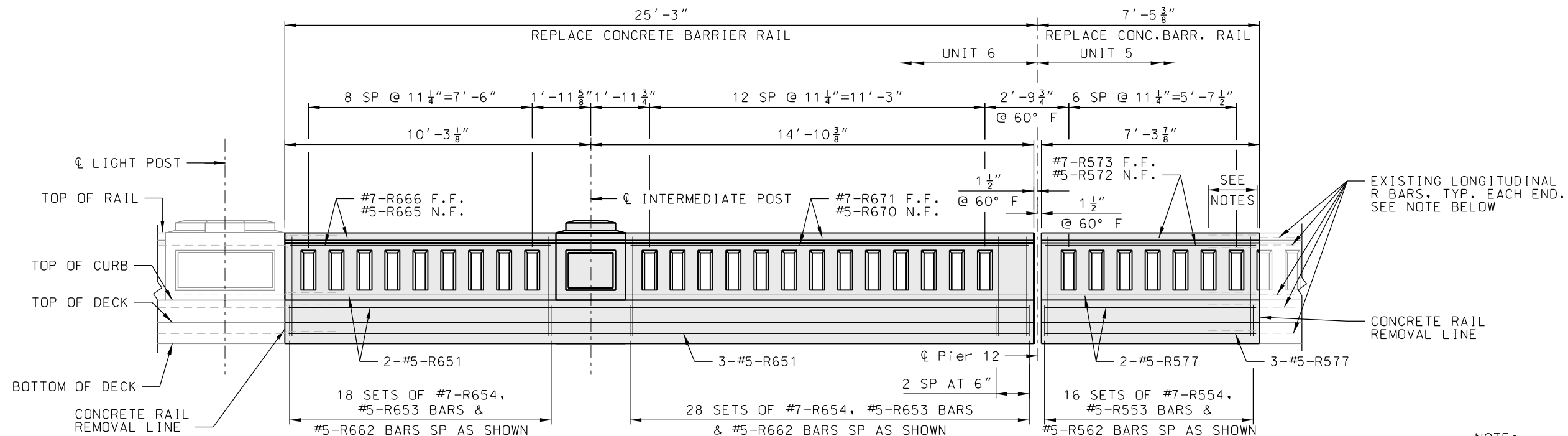
REV	DATE	DESCRIPTION	DESIGNED BY	DM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION BID ALTERNATE – 115RE JOINTS EAST BARRIER RAIL RECONSTRUCTION LIMITS PIERS 2, 5 & 8	SCALE FOR 22"x34":	
			CHECKED BY	BAP				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		FILENAME:	
			DRAWN BY	DM						CONTRACT NO.:	
			CHECKED BY	BAP						CONTRACT NO. ***	
			APPROVED BY	CDH				DRAWING NO.:	SHEET NO.:		
PLOT DATE: 12/22/2022			5:20:44 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION			ST321	315



INSIDE ELEVATION AT PIER 11



BARRIER RAIL VOID DETAIL



INSIDE ELEVATION AT PIER 12

NOTE:

BARRIER AND DECK REMOVAL LIMITS MAY BE DIFFERENT. BARRIER LIMITS REMOVED TO A NEAT EDGE OF BARRIER POST OR IN A BARRIER OPENING.

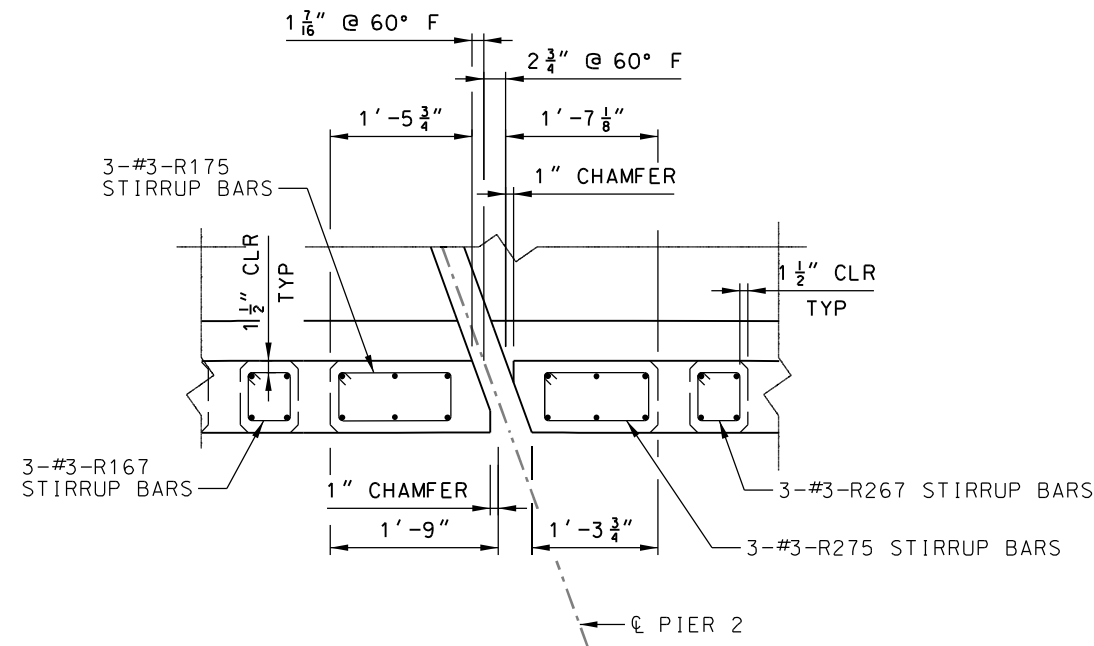
SEE BARRIER RAIL DETAILS I & III FOR REINFORCING IN LIGHT POSTS AND INTERMEDIATE POSTS.

ALL DIMENSIONS ARE ALONG OUTSIDE FASCIA.

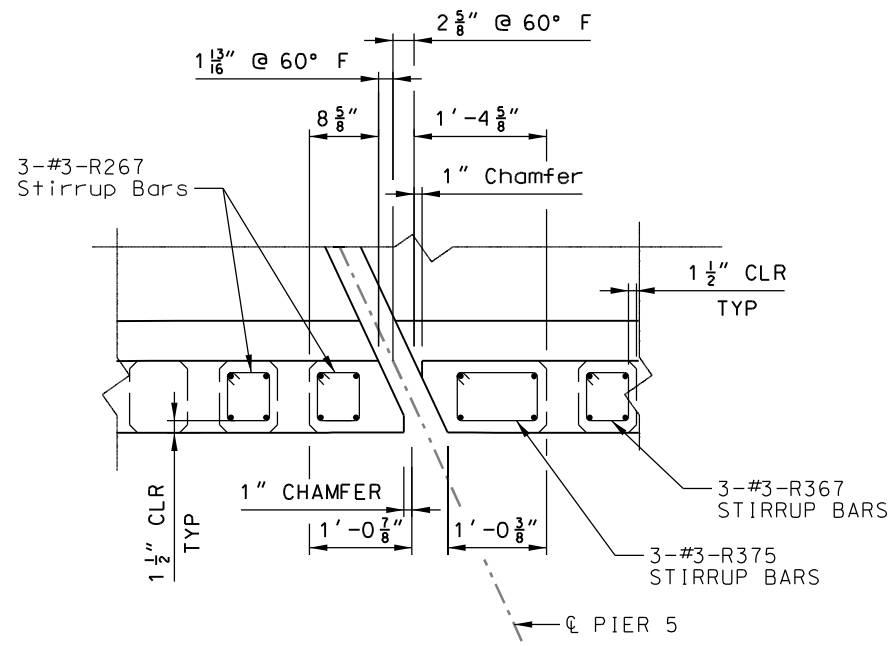
CONTRACTOR SHALL SALVAGE EXISTING LONGITUDINAL "R" BARS AS REQ'D TO PROVIDE A MIN. LAP LENGTH OF 3'-6" CONSIDERING JOINT SKEW.

FOR BILL OF REINFORCING STEEL, SEE ST330.

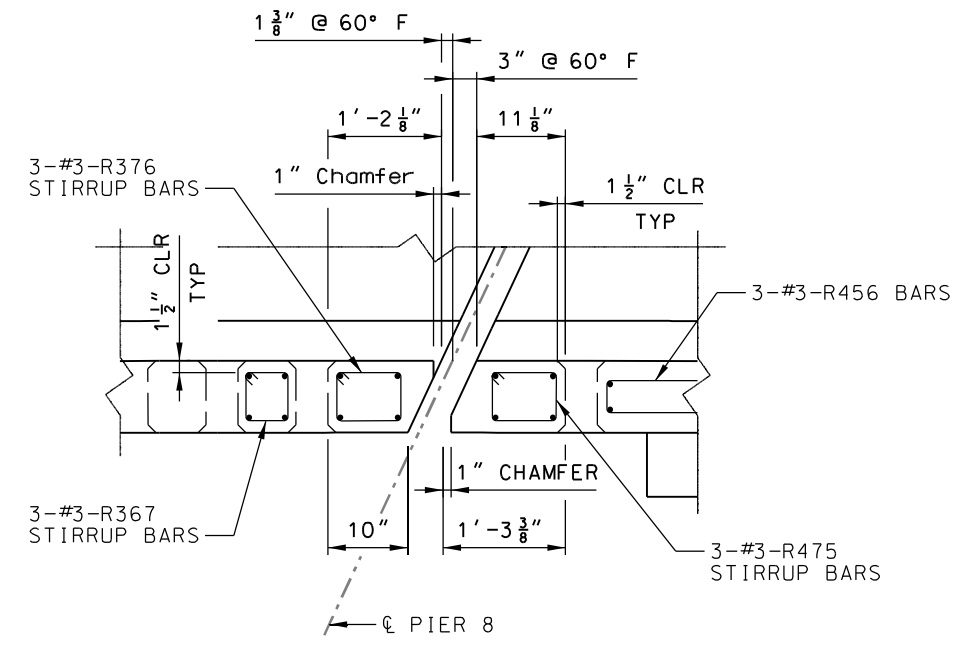
REV	DATE	DESCRIPTION	DESIGNED BY	DM	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	BAP			BID ALTERNATE - 115RE JOINTS	FILENAME:
			DRAWN BY	DM			EAST BARRIER RAIL	05-ST322-East_Barr_Rail_Rem_Pier11.dgn
			CHECKED BY	BAP			RECONSTRUCTION LIMITS	CONTRACT NO.:
			APPROVED BY	CDH			PIERS 11 & 12	VOLUME:
								DRAWING NO.:
								SHEET NO.:
								316



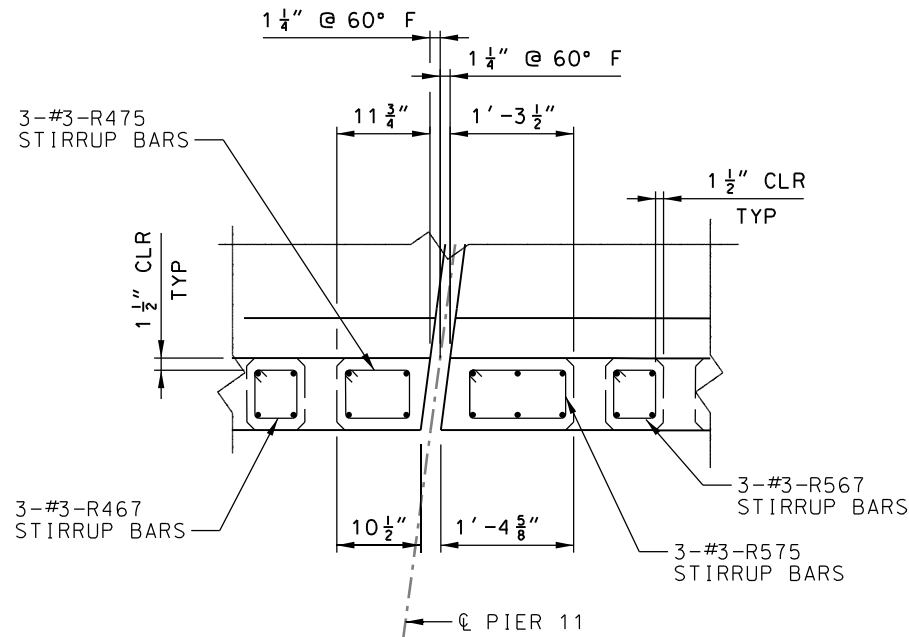
PLAN OF EXPANSION JOINT AT PIER 2



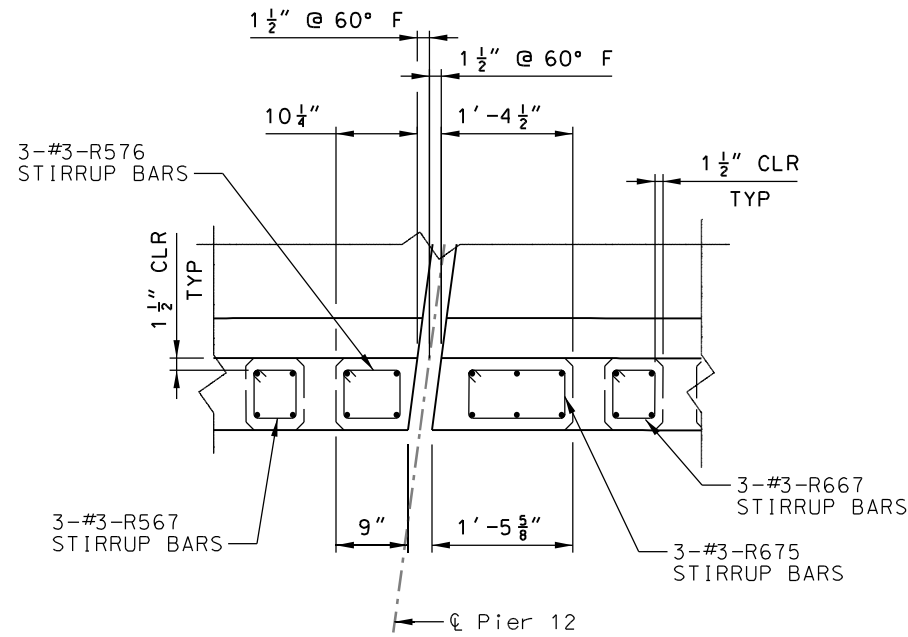
PLAN OF EXPANSION JOINT AT PIER 5



PLAN OF EXPANSION JOINT AT PIER 8

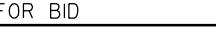


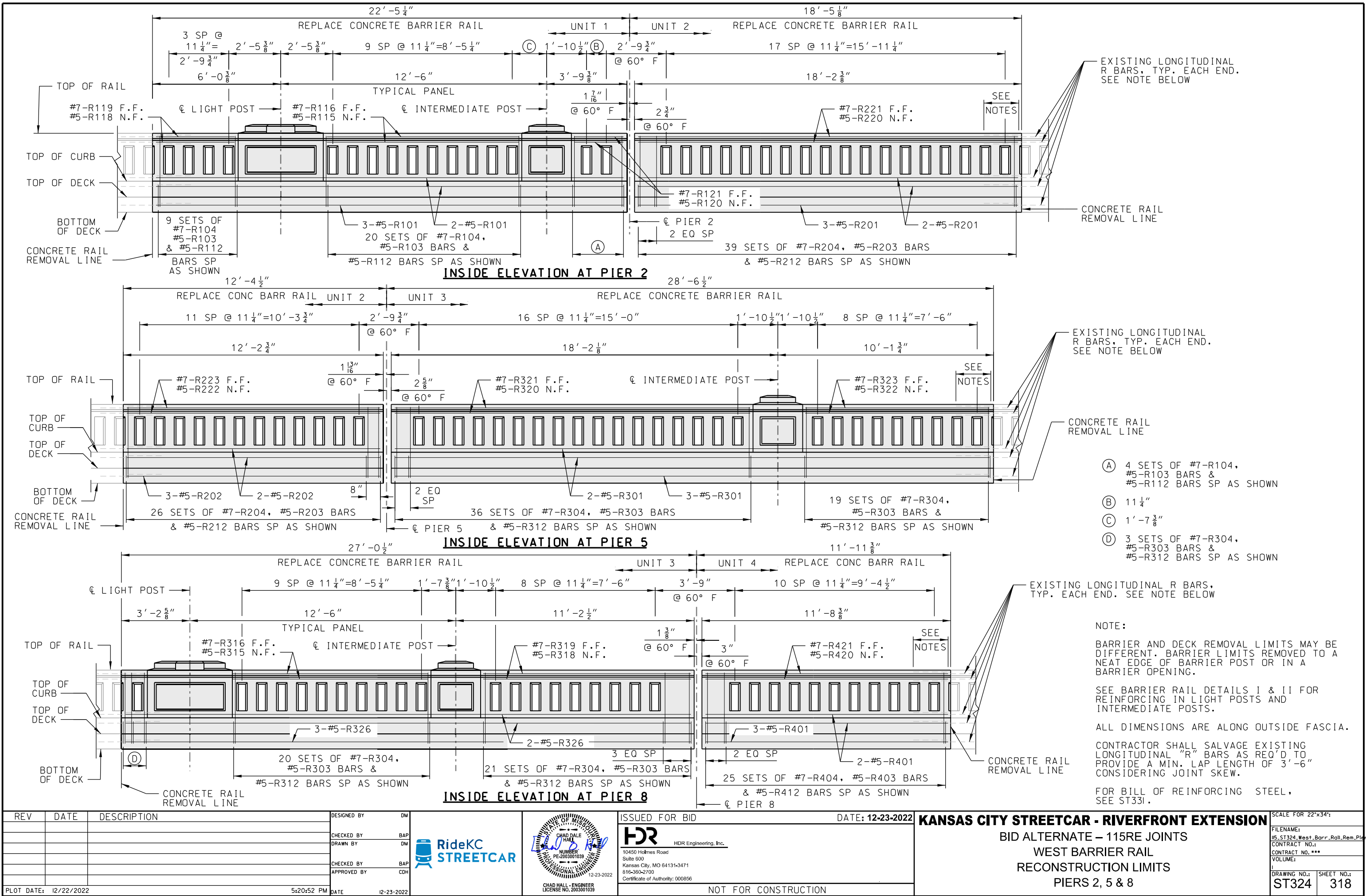
PLAN OF EXPANSION JOINT AT PIER 11



PLAN OF EXPANSION JOINT AT PIER 12

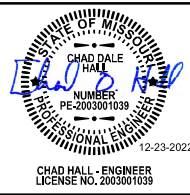
NOTE:
FOR BILL OF REINFORCING STEEL, SEE
ST330.

REV	DATE	DESCRIPTION	DESIGNED BY	DM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION BID ALTERNATE – 115RE JOINTS EAST BARRIER DETAILS AT EXPANSION JOINTS	SCALE FOR 22"x34":		
			CHECKED BY	BAP			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		FILENAME: 115_ST323_East_Barr_Details.dgn		
			DRAWN BY	DM						CONTRACT NO.: CONTRACT NO. ***		
			CHECKED BY	BAP						VOLUME: I		
			APPROVED BY	CDH						DRAWING NO.: ST323		SHEET NO.: 317
PLOT DATE: 12/22/2022			5:20:50 PM		DATE	12-23-2022						



REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		5:20:52 PM

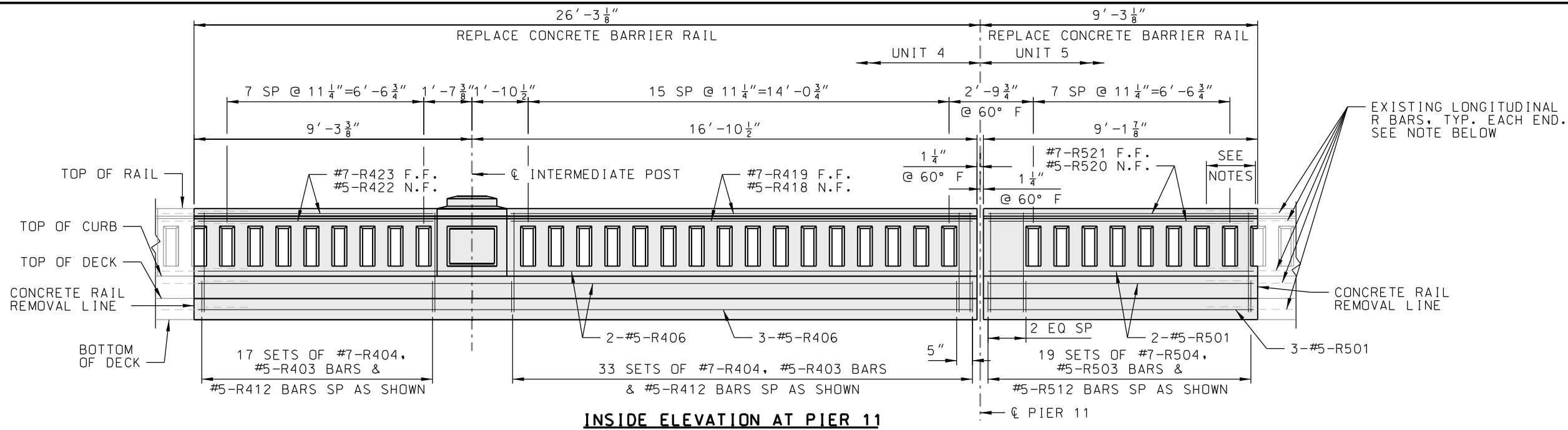
DESIGNED BY	DM
CHECKED BY	BAP
DRAWN BY	DM
CHECKED BY	BAP
APPROVED BY	CDH
DATE	12-23-2022



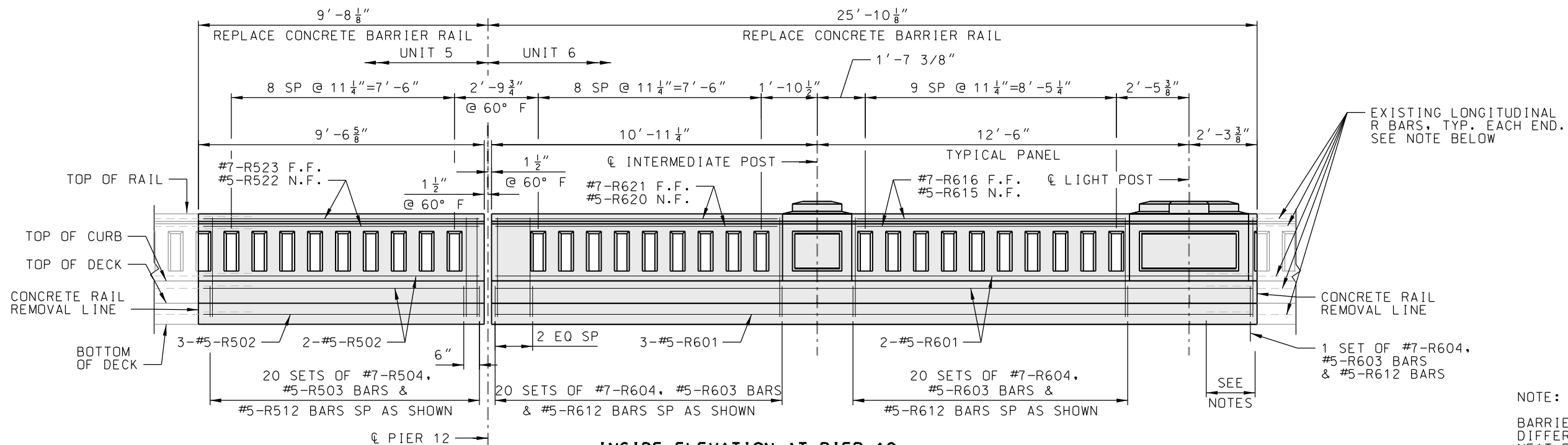
ISSUED FOR BID	DATE: 12-23-2022
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
BID ALTERNATE - 115RE JOINTS	
WEST BARRIER RAIL	
RECONSTRUCTION LIMITS	
PIERS 2, 5 & 8	

SCALE FOR 22"x34":
FILENAME:
CONTRACT NO.:
VOLUME:
DRAWING NO.:
SHEET NO.:



INSIDE ELEVATION AT PIER 11



INSIDE ELEVATION AT PIER 12

NOTE:

BARRIER AND DECK REMOVAL LIMITS MAY BE DIFFERENT. BARRIER LIMITS REMOVED TO A NEAT EDGE OF BARRIER POST OR IN A BARRIER OPENING.

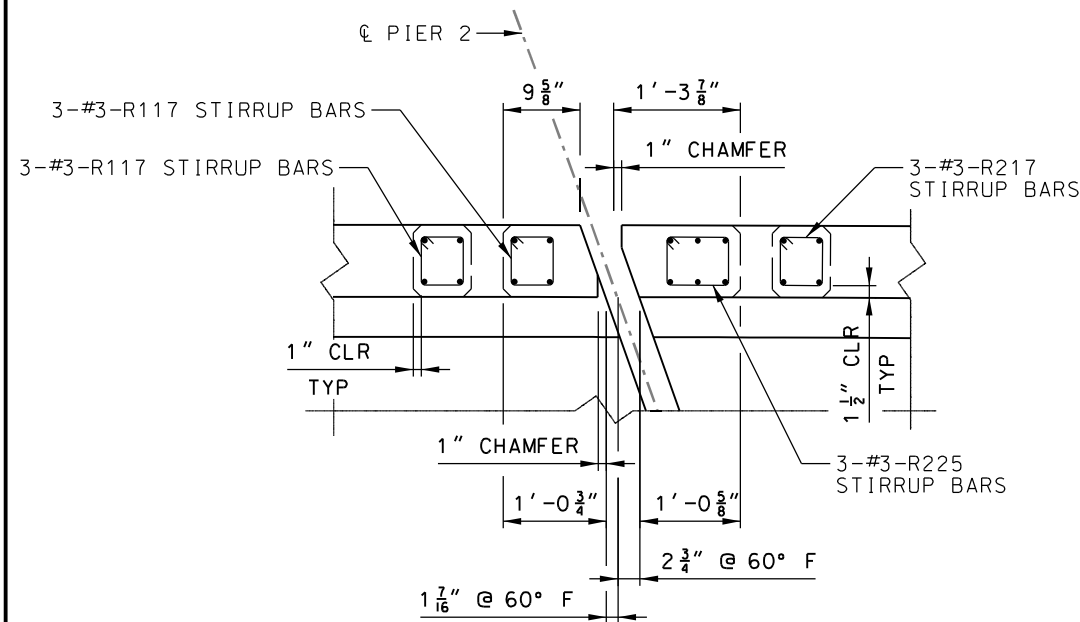
SEE BARRIER RAIL DETAILS I & II FOR REINFORCING IN LIGHT POSTS AND INTERMEDIATE POSTS.

ALL DIMENSIONS ARE ALONG OUTSIDE FASCIA.

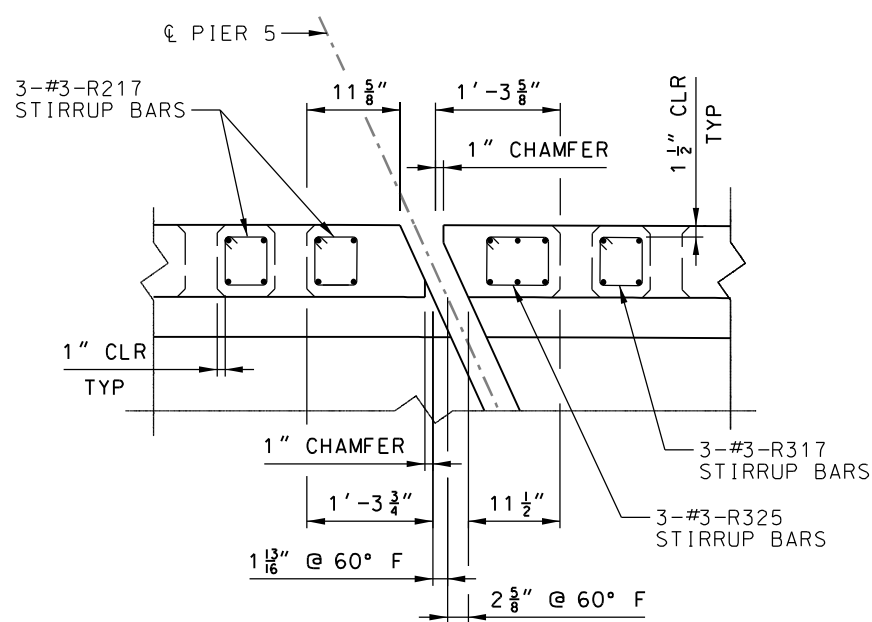
CONTRACTOR SHALL SALVAGE EXISTING LONGITUDINAL "R" BARS AS REQ'D TO PROVIDE A MIN. LAP LENGTH OF 3'-6" CONSIDERING JOINT SKEW.

FOR BILL OF REINFORCING STEEL, SEE ST331.

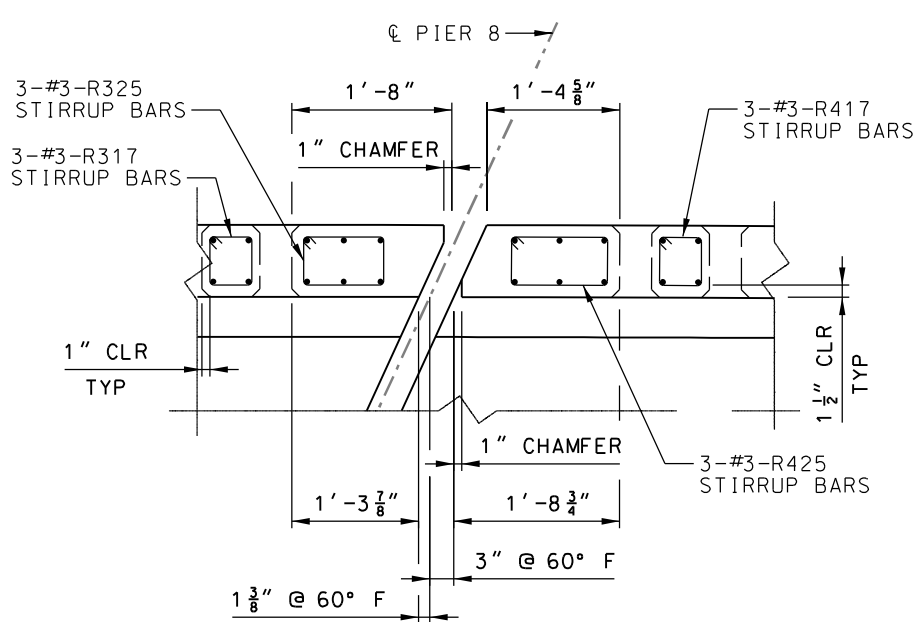
REV	DATE	DESCRIPTION	DESIGNED BY	DM	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	BAP	HDR	HDR Engineering, Inc.	BID ALTERNATE - 115RE JOINTS	FILENAME:
			DRAWN BY	DM	10450 Holmes Road		WEST BARRIER RAIL	05-ST325_West_Barr_Rail_Rem_Pier11-12.dgn
			CHECKED BY	BAP	Suite 600		RECONSTRUCTION LIMITS	CONTRACT NO.:
			APPROVED BY	CDH	Kansas City, MO 64131-3471		PIERS 11 & 12	CONTRACT NO. ***
					816-360-2700			VOLUME:
					Certificate of Authority: 000856			DRAWING NO.:
								SHEET NO.:
								ST325 319
PLOT DATE: 12/22/2022			5:20:55 PM		DATE: 12-23-2022		NOT FOR CONSTRUCTION	



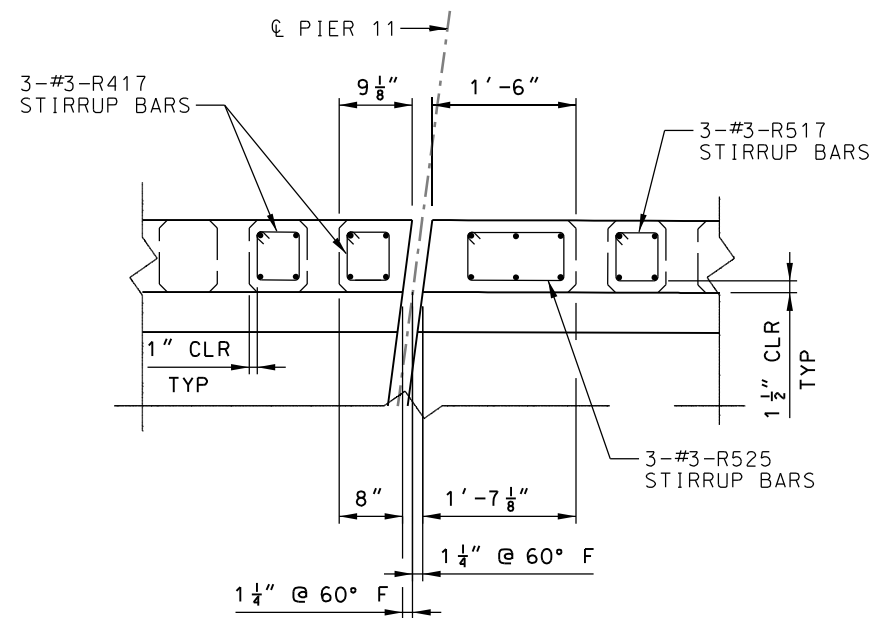
PLAN OF EXPANSION JOINT AT PIER 2



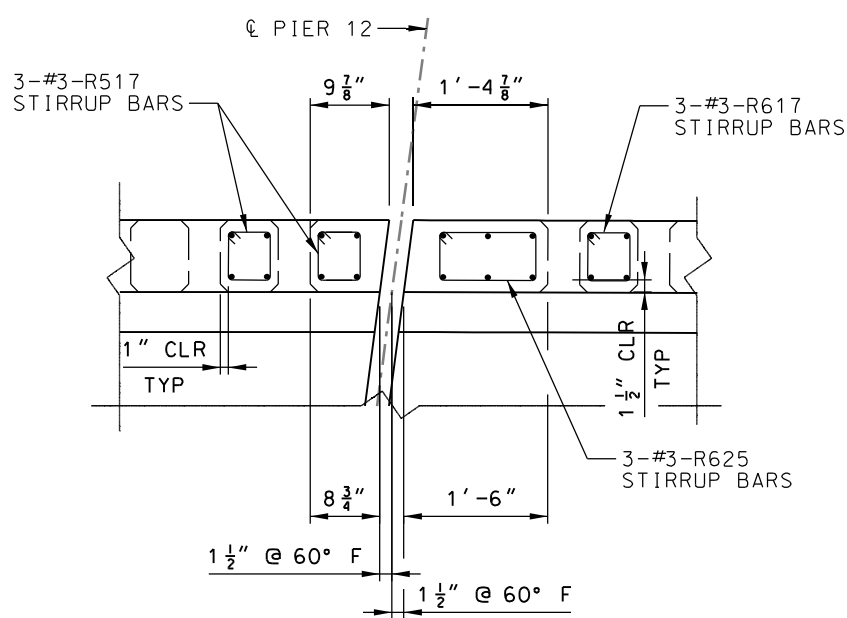
PLAN OF EXPANSION JOINT AT PIER 5



PLAN OF EXPANSION JOINT AT PIER 8

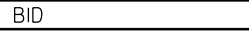


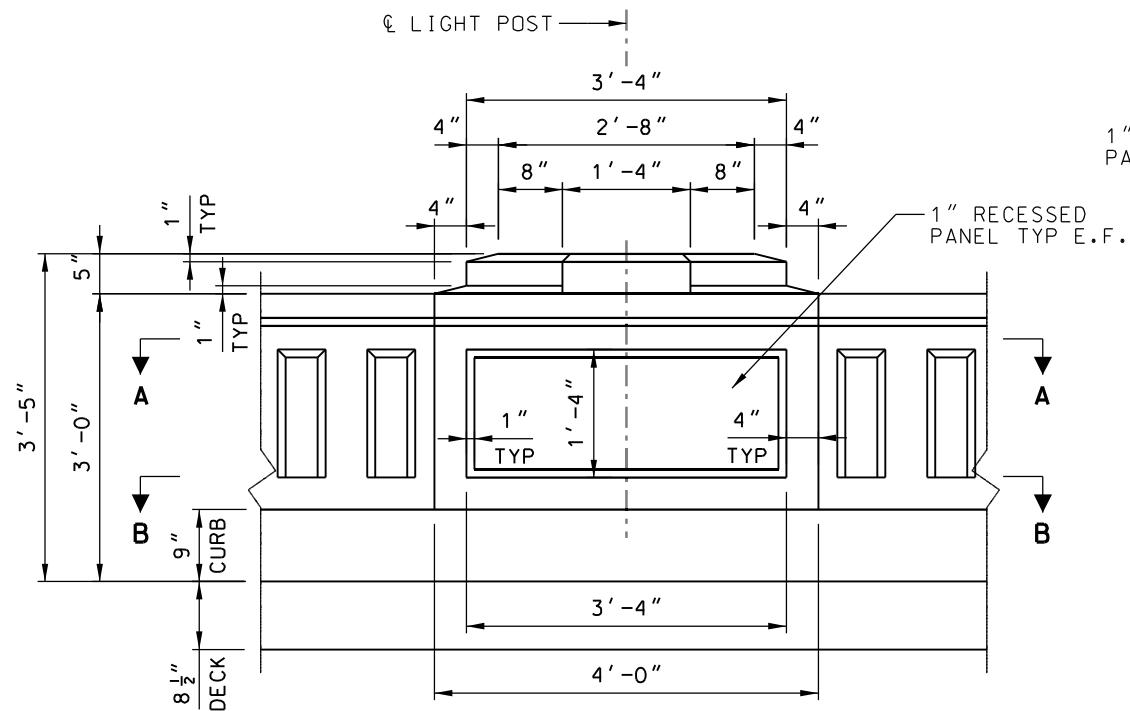
PLAN OF EXPANSION JOINT AT PIER 11



PLAN OF EXPANSION JOINT AT PIER 12

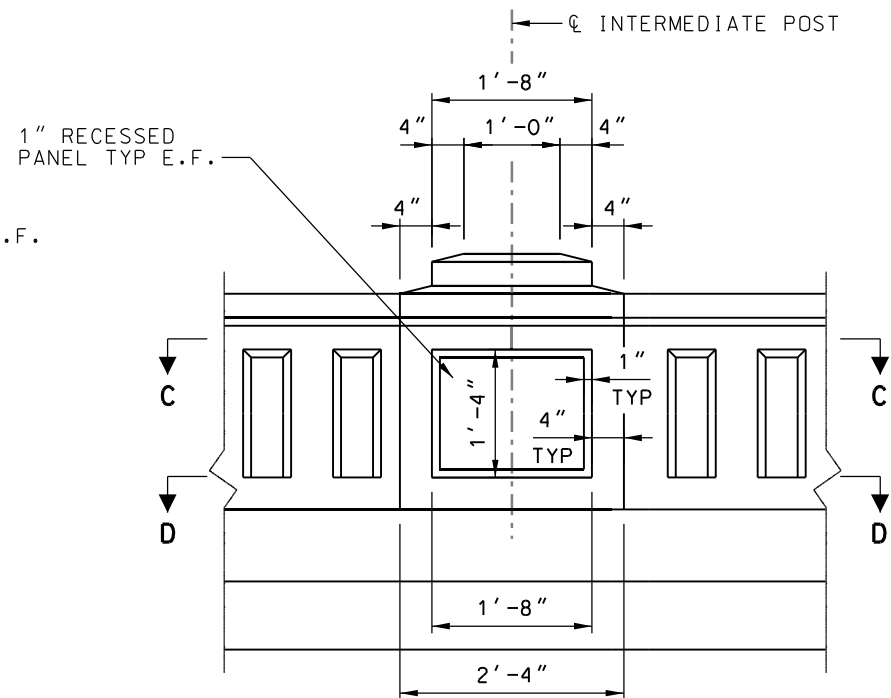
NOTE:
FOR BILL OF REINFORCING STEEL,
SEE ST331.

REV	DATE	DESCRIPTION	DESIGNED BY	DM			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION BID ALTERNATE – 115RE JOINTS WEST BARRIER DETAILS AT EXPANSION JOINTS	SCALE FOR 22"x34":	
			CHECKED BY	BAP			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		FILENAME:	
			DRAWN BY	DM						FILE: J:\5_ST326_West_Barr_Details.dgn	
			CHECKED BY	BAP						CONTRACT NO.:	
			APPROVED BY	CDH						CONTRACT NO. ***	
PLOT DATE: 12/22/2022			5:20:58 PM		DATE	12-23-2022				VOLUME:	
										DRAWING NO.:	
										SHEET NO.:	
										ST326	320



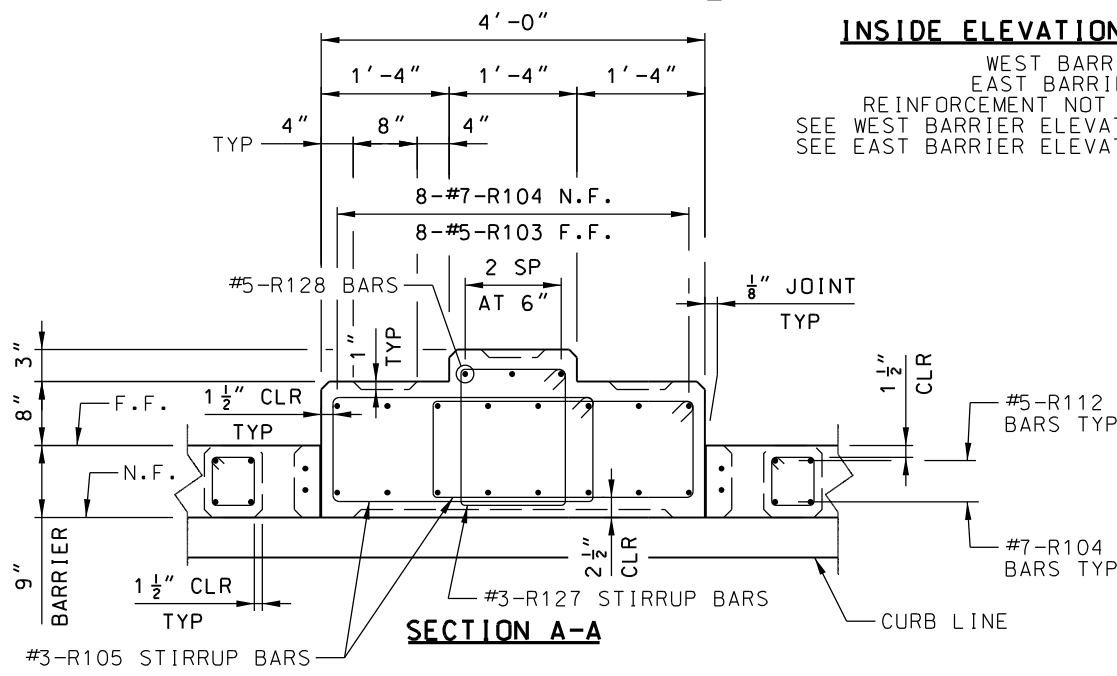
INSIDE ELEVATION - LIGHT POST

WEST BARRIER SHOWN
EAST BARRIER SIMILAR
REINFORCEMENT NOT SHOWN FOR CLARITY
SEE WEST BARRIER ELEVATION VIEW, SEE ST328
SEE EAST BARRIER ELEVATION VIEW, SEE ST329

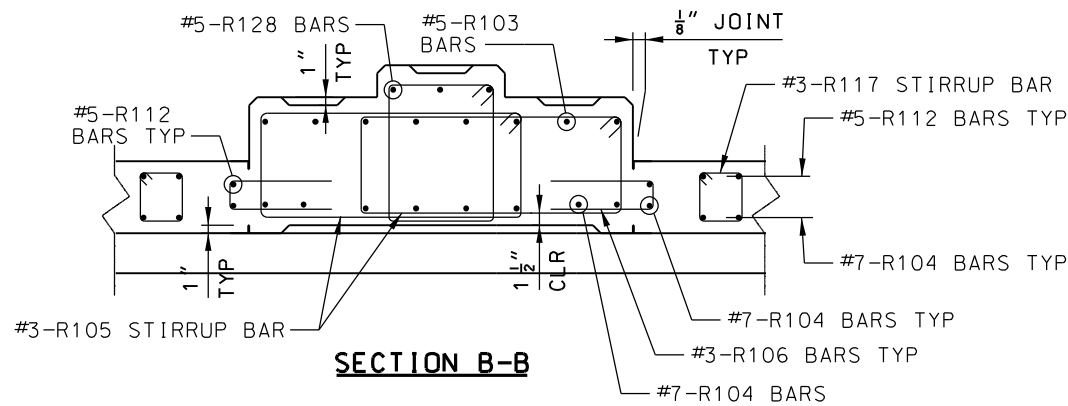


INSIDE ELEVATION - INTERMEDIATE POST

WEST BARRIER SHOWN
EAST BARRIER SIMILAR
REINFORCEMENT NOT SHOWN FOR CLARITY
SEE WEST BARRIER ELEVATION VIEW, SEE ST328
SEE EAST BARRIER ELEVATION VIEW, SEE ST329

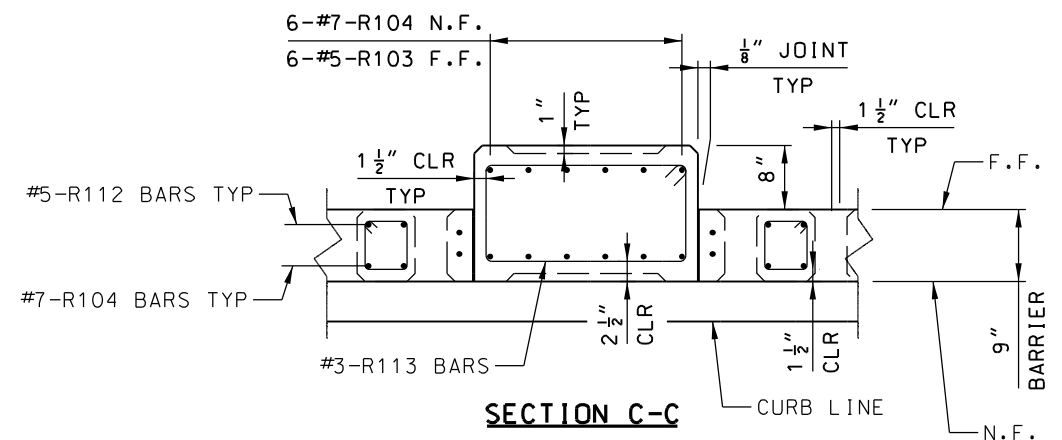


SECTION A-A

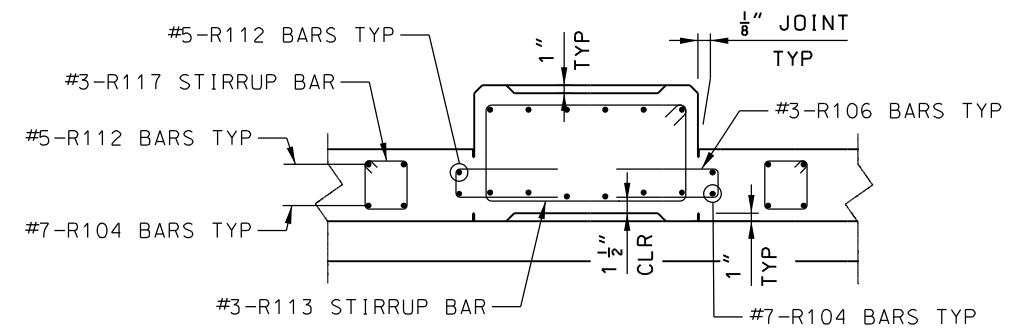


SECTION B-B

NOTES:
FOR BILL OF REINFORCING STEEL,
SEE ST331.
REINFORCING SHOWN FOR UNIT 1, WEST RAIL
OTHER UNITS SIMILAR.
N.F. DENOTES NEAR FACE
F.F. DENOTES FAR FACE
E.F. DENOTES EACH FACE.
EXISTING LIGHTING CONDUIT TO BE REMOVED
AND REPLACED AS NEEDED WITH NEW BARRIER.



SECTION C-C

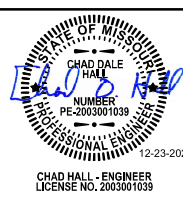


SECTION D-D

WEST BARRIER SHOWN
SEE ST329 FOR EAST BARRIER BAR CALL OUTS

REV	DATE	DESCRIPTION

DESIGNED BY	DM
CHECKED BY	BAP
DRAWN BY	DM
CHECKED BY	BAP
APPROVED BY	CDH

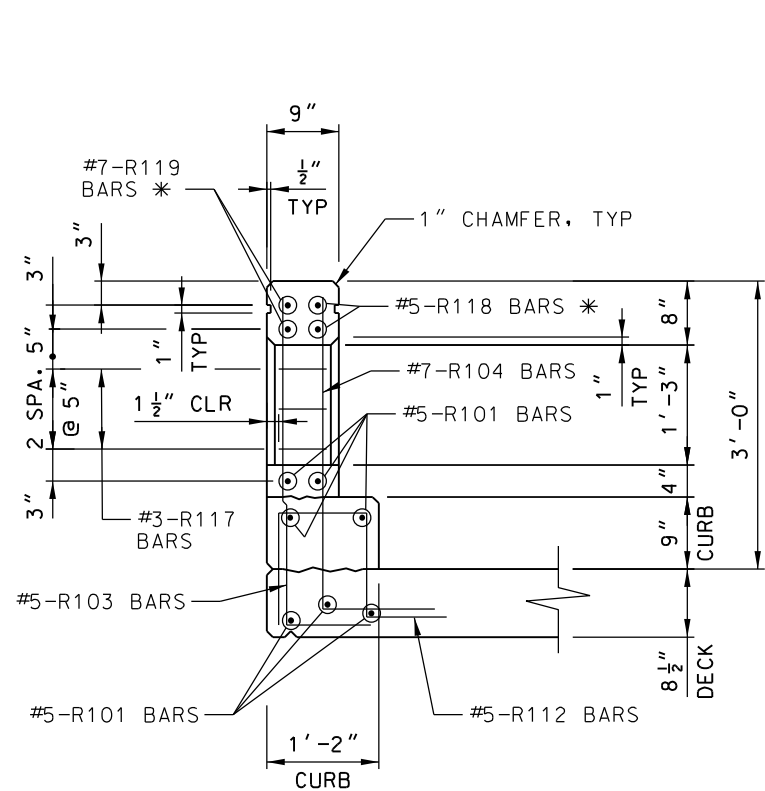


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

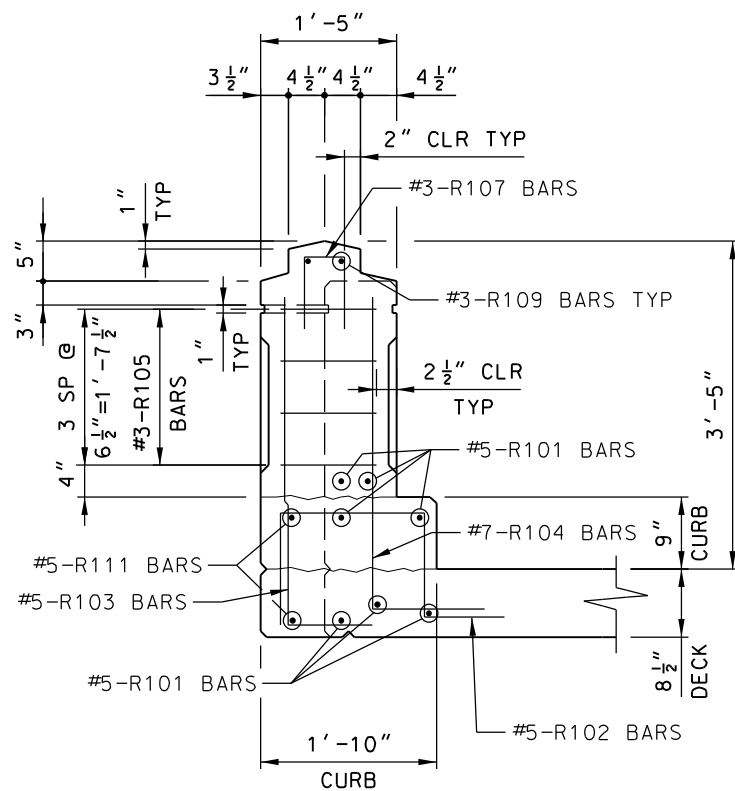
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

BID ALTERNATE - 115RE JOINTS
BARRIER RAIL DETAILS I

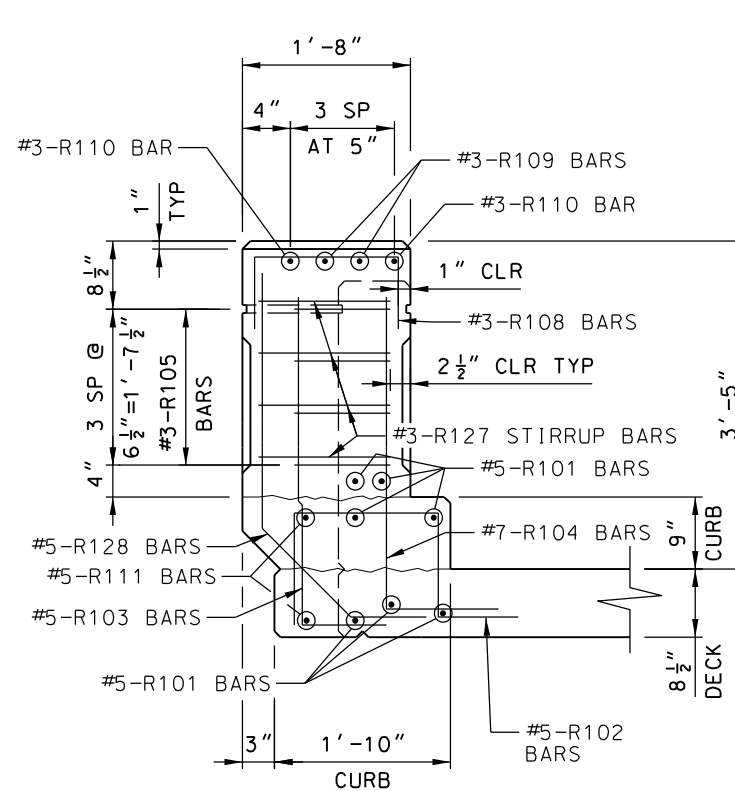
SCALE FOR 22"x34":
FILENAME: 05-ST327-Barrier_Details.dgn
CONTRACT NO.:
CONTRACT NO. ***
VOLUME:
DRAWING NO.:
ST327
SHEET NO.:
321



SECTION A-A



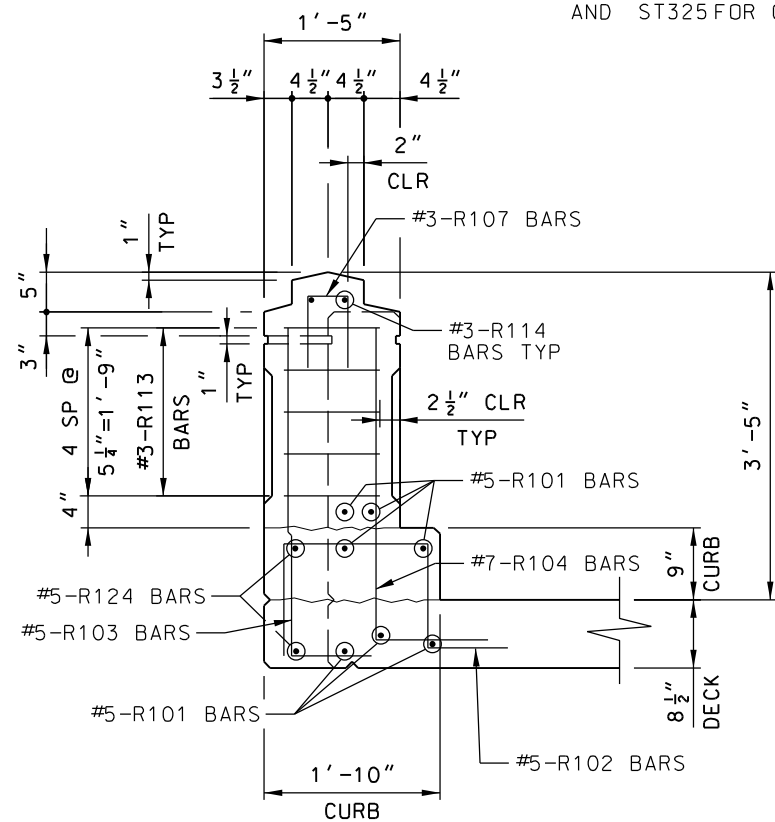
SECTION B-B



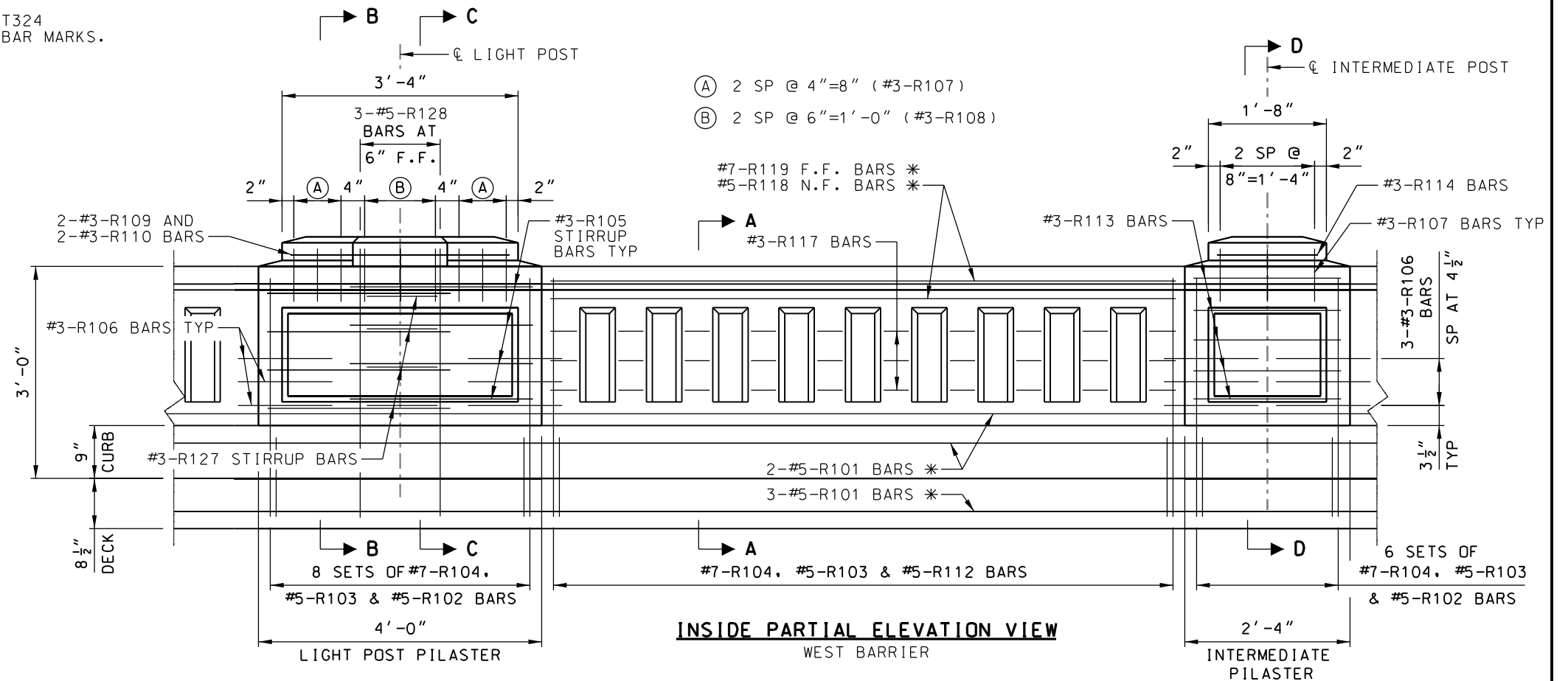
SECTION C-C

NOTES:
FOR BILL OF REINFORCING STEEL, SEE ST331.
REINFORCING SHOWN FOR UNIT 1, WEST BARRIER RAIL.
OTHER UNITS SIMILAR.
N.F. DENOTES NEAR FACE
F.F. DENOTES FAR FACE
E.F. DENOTES EACH FACE.
EXISTING LIGHTING CONDUIT TO BE REMOVED AND
REPLACED AS NEEDED WITH NEW BARRIER.

* SEE RAIL ELEVATION ST324
AND ST325 FOR OTHER BAR MARKS.



SECTION D-D

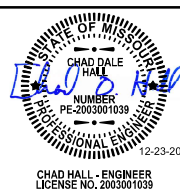


INSIDE PARTIAL ELEVATION VIEW

WEST BARRIER

INTERMEDIATE
PILASTER

REV	DATE	DESCRIPTION	DESIGNED BY	DM
			CHECKED BY	BAP
			DRAWN BY	DM
			CHECKED BY	BAP
			APPROVED BY	CDH
PLOT DATE: 12/22/2022			DATE	12-23-2022

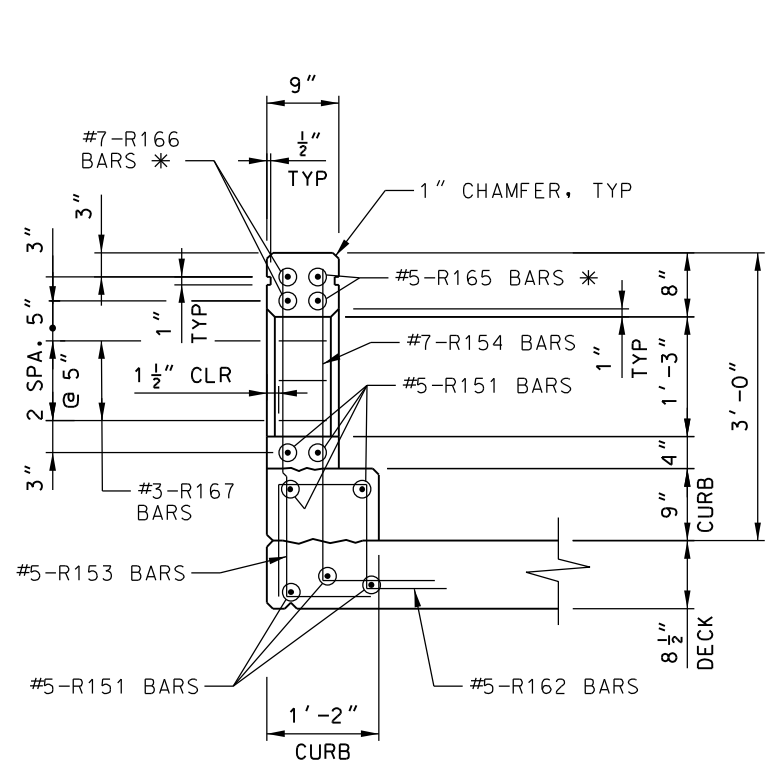


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

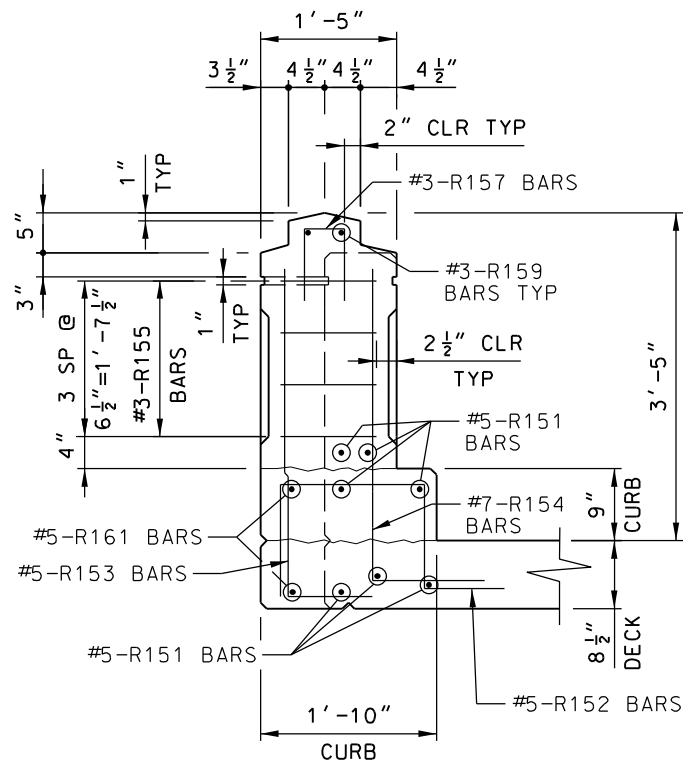
BID ALTERNATE - 115RE JOINTS
BARRIER RAIL DETAILS II

SCALE FOR 22"x34":	
FILENAME: 05-ST328.BARRIER_Details2.dgn	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
ST328	322

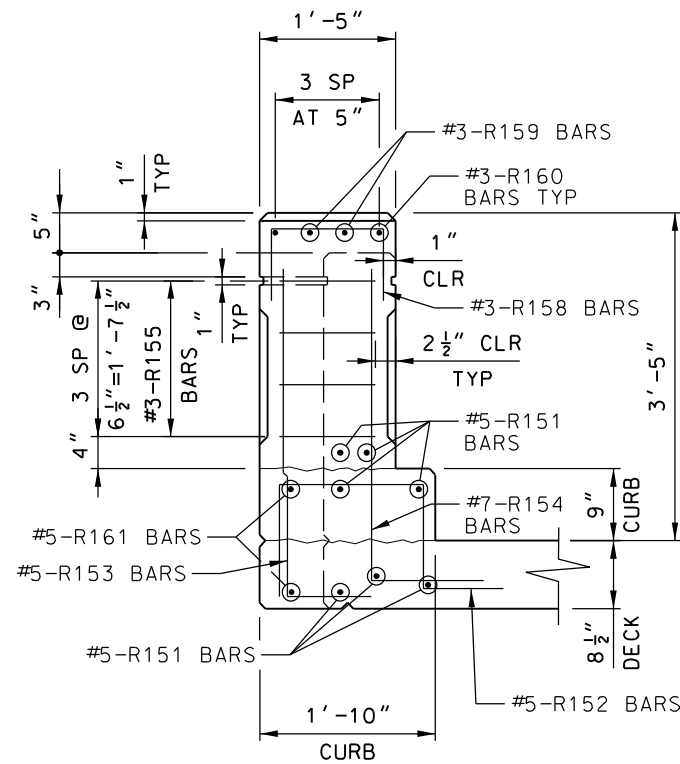


SECTION A-A

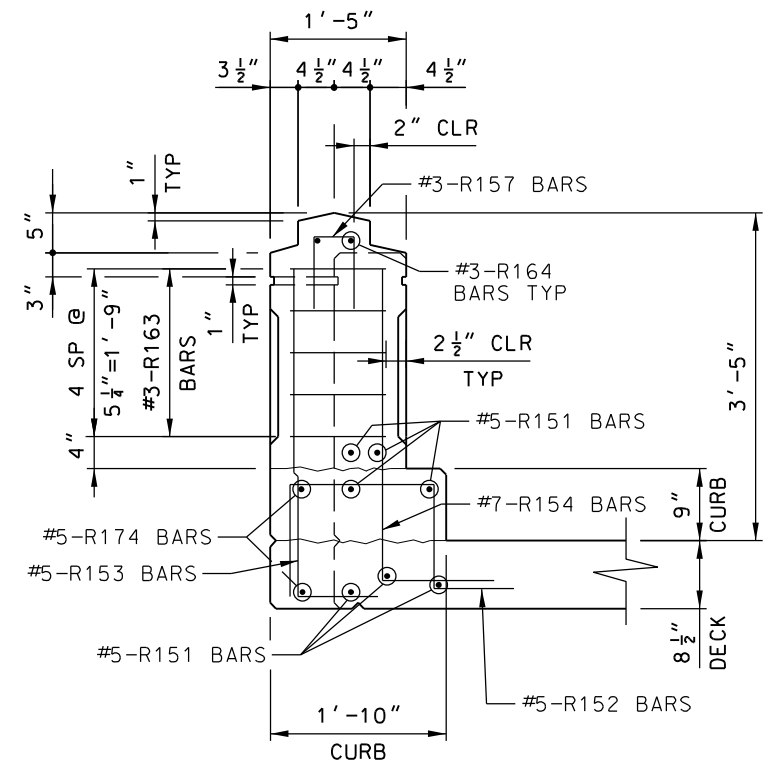
* SEE RAIL ELEVATION ST321 AND ST322 FOR OTHER BAR MARKS.



SECTION B-B



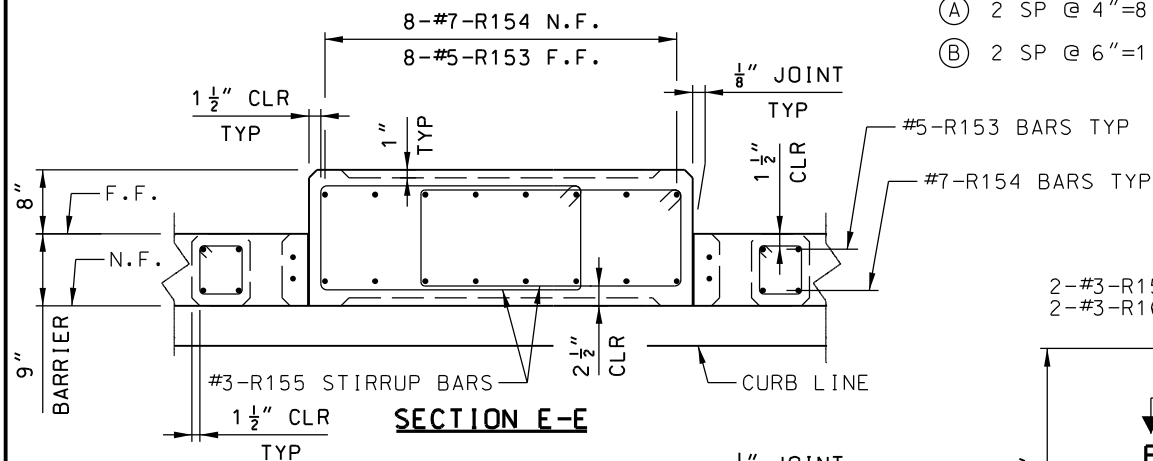
SECTION C-C



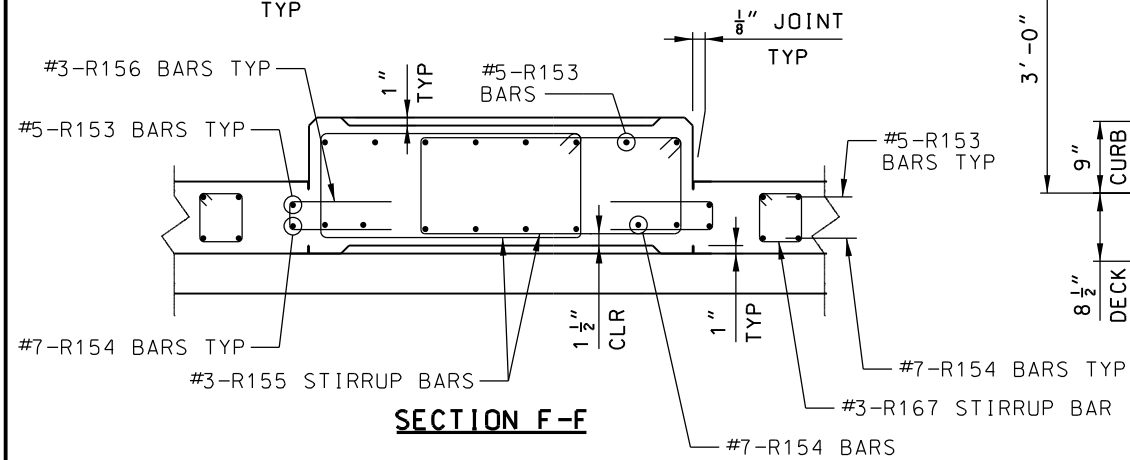
SECTION D-D

- (A) 2 SP @ 4"=8" (#3-R157)
(B) 2 SP @ 6"=1'-0" (#3-R158)

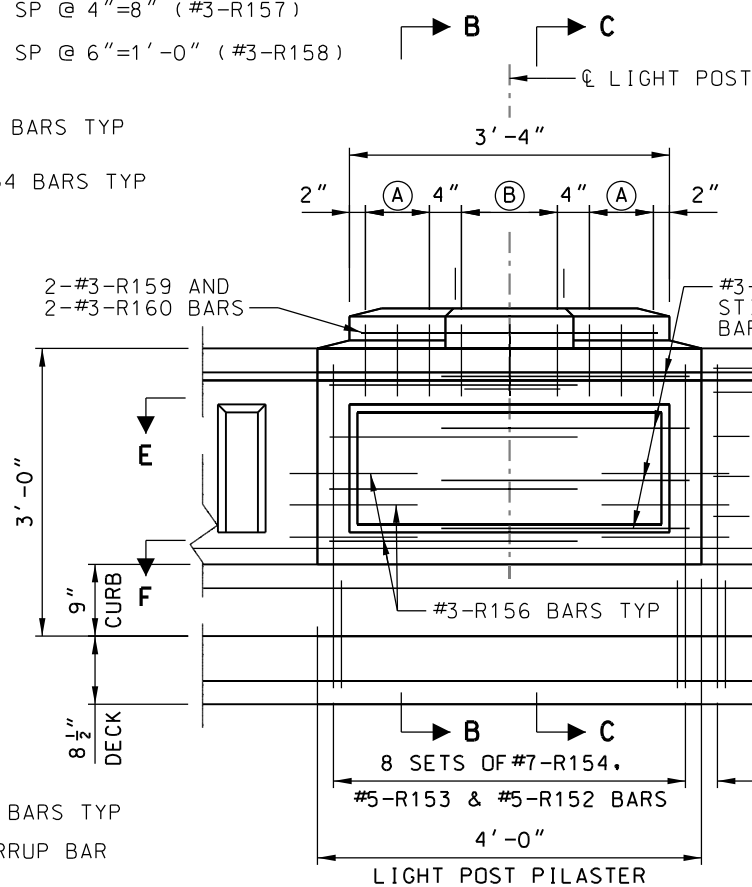
NOTES:
FOR BILL OF REINFORCING STEEL, SEE ST330.
REINFORCING SHOWN FOR UNIT 1, EAST BARRIER RAIL.
OTHER UNITS SIMILAR.
N.F. DENOTES NEAR FACE
F.F. DENOTES FAR FACE
E.F. DENOTES EACH FACE.
EXISTING LIGHTING CONDUIT TO BE REMOVED AND
REPLACED AS NEEDED WITH NEW BARRIER.



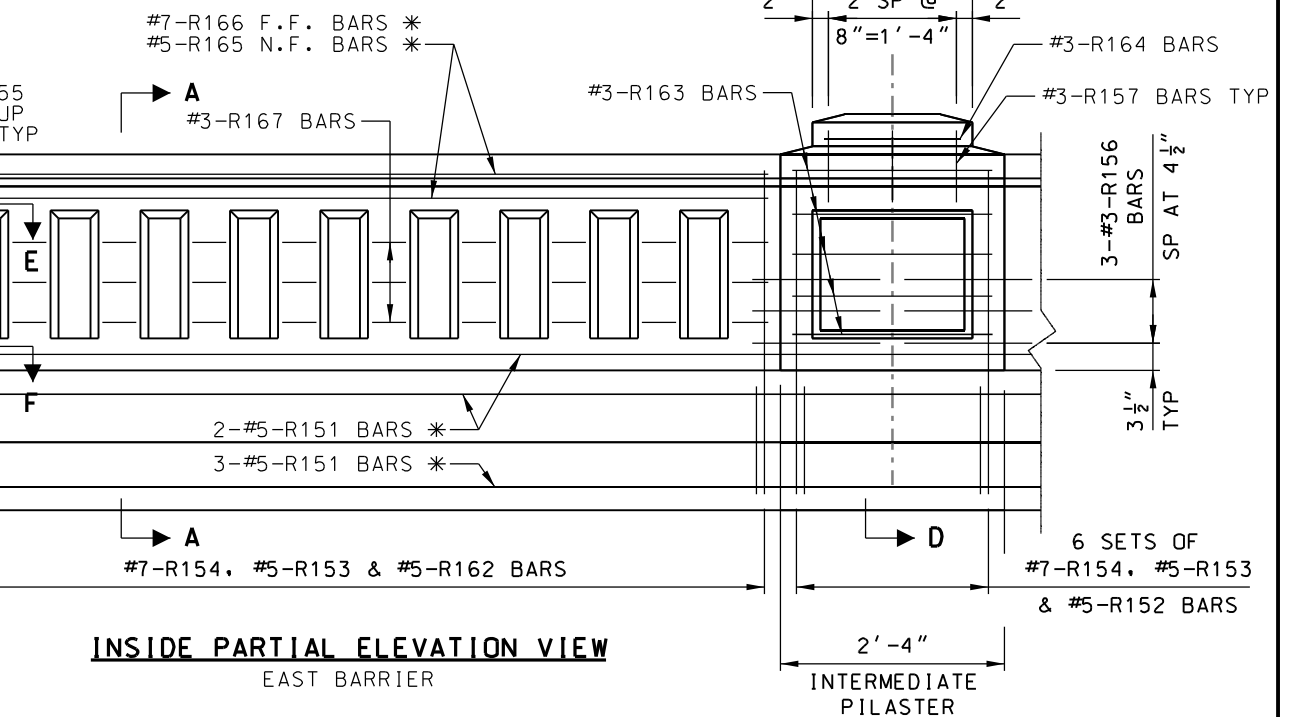
SECTION E-E



SECTION F-F



LIGHT POST PILASTER

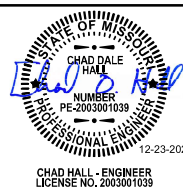


INSIDE PARTIAL ELEVATION VIEW

EAST BARRIER

INTERMEDIATE PILASTER

REV	DATE	DESCRIPTION	DESIGNED BY	DM
			CHECKED BY	BAP
			DRAWN BY	DM
			CHECKED BY	BAP
			APPROVED BY	CDH
PLOT DATE: 12/22/2022			DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

BID ALTERNATE - 115RE JOINTS
BARRIER RAIL DETAILS III

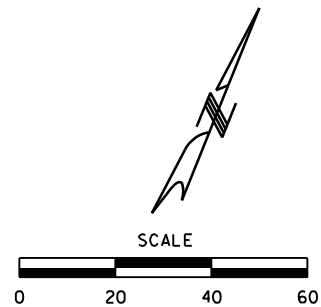
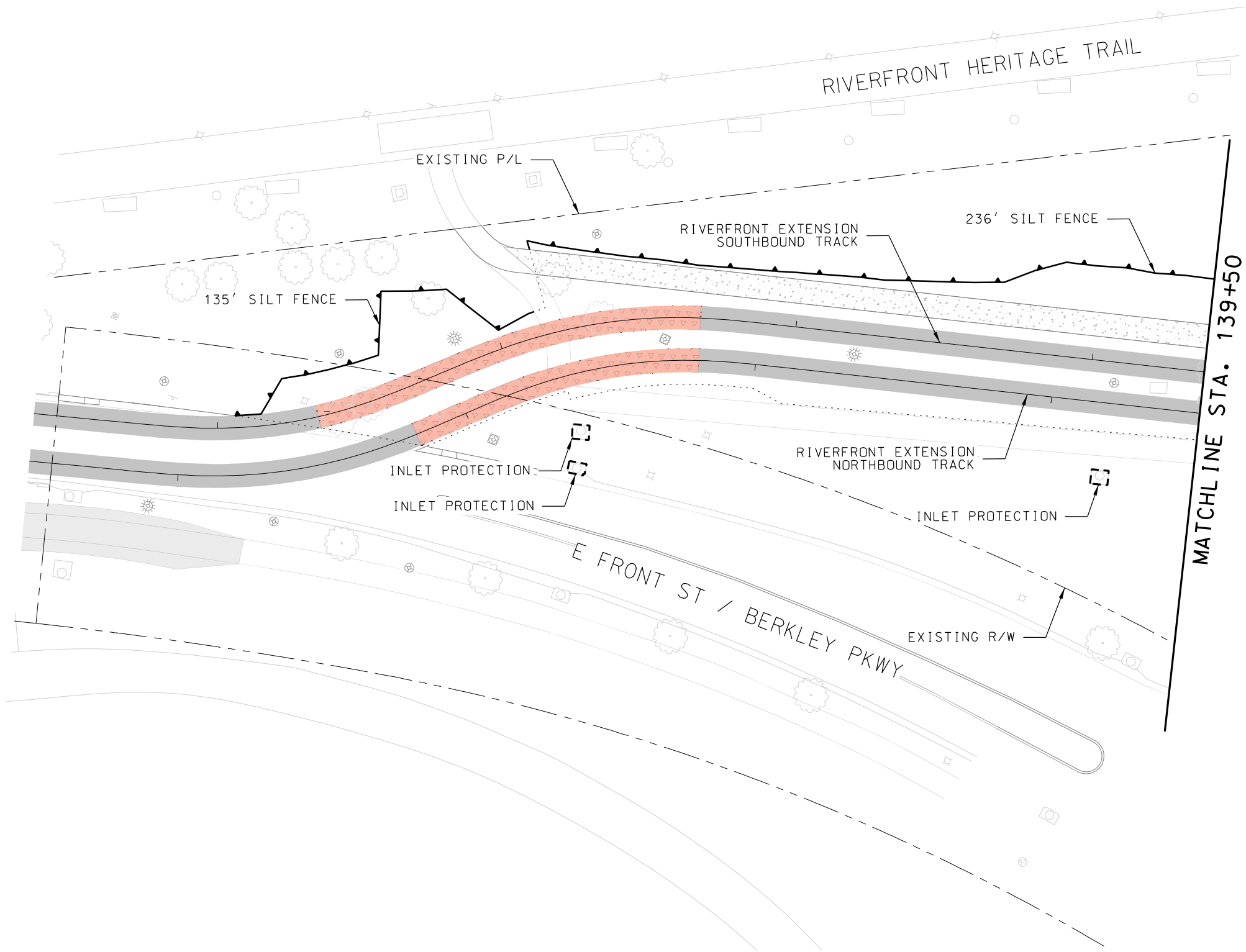
SCALE FOR 22"x34":	
FILENAME: 05-ST329-Barrier_Details3.dgn	
CONTRACT NO.:	
CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
ST329	323

BILL OF REINFORCING STEEL																													
NO.	REQ'D.	MARK NO.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS												NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT			
												B		C		D		E		F		H					K		
												FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.
EAST BARRIER CURB																													
UNIT 1																													
7	5	R151	EAST BARRIER	E	20							30	7.000											30	7.30	7	223		
14	5	R152	EAST BARRIER	E	10							0	0.000	1	2.000	1	6.000	0	10.000						4	84	3	62	
63	5	R153	EAST BARRIER	E	6							3	5.000	0	10.000	0	0.000	0	0.000						4	34	1	268	
63	7	R154	EAST BARRIER	E	6							3	5.000	1	2.000	0	0.000	0	0.000						4	74	5	569	
8	3	R155	EAST BARRIER	E	13	S						1	0.000	2	0.000	1	0.000	2	0.000						6	86	6	20	
12	3	R156	EAST BARRIER	E	10							0	0.000	0	9.000	0	4.000	0	0.000						1	101	8	8	
9	3	R157	EAST BARRIER	E	10							0	0.000	0	9.000	0	5.000	0	0.000						1	111	9	6	
3	3	R158	EAST BARRIER	E	10							0	0.000	0	9.000	1	3.000	0	0.000						2	92	7	3	
2	3	R159	EAST BARRIER	E	20							3	1.000												3	13	1	2	
2	3	R160	EAST BARRIER	E	20							1	1.000												1	11	1	1	
2	5	R161	EAST BARRIER	E	20							3	9.000												3	93	9	8	
63	5	R162	EAST BARRIER	E	10							0	0.000	1	2.000	0	11.000	0	10.000						4	13	8	241	
5	3	R163	EAST BARRIER	E	13	S						1	0.000	2	1.000	1	0.000	2	1.000						6	106	8	13	
2	3	R164	EAST BARRIER	E	20							1	5.000												1	51	5	1	
2	5	R165	EAST BARRIER	E	20							8	10.000												8	108	10	18	
2	7	R166	EAST BARRIER	E	20							8	10.000												8	108	10	36	
63	3	R167	EAST BARRIER	E	13	S						0	6.000	0	5.250	0	6.000	0	5.250						2	72	5	57	
2	5	R170	EAST BARRIER	E	20							13	7.000												13	713	7	28	
2	7	R171	EAST BARRIER	E	20							13	7.000												13	713	7	56	
2	5	R174	EAST BARRIER	E	20							2	1.000												2	12	1	4	
3	3	R175	EAST BARRIER	E	13	S						0	6.000	1	2.000	0	6.000	1	2.000						4	03	10	4	
UNIT 2																													
7	5	R251	EAST BARRIER	E	20							12	3.000												12	312	3	89	
69	5	R253	EAST BARRIER	E	6							3	5.000	0	10.000	0	0.000	0	0.000							4	34	1	294
69	7	R254	EAST BARRIER	E	6							3	5.000	1	2.000	0	0.000	0	0.000							4	74	5	623
69	5	R262	EAST BARRIER	E	10							0	0.000	1	2.000	0	11.000	0	10.000							4	13	8	264
96	3	R267	EAST BARRIER	E	13	S						0	6.000	0	5.250	0	6.000	0	5.250							2	72	5	87
2	5	R270	EAST BARRIER	E	20							12	3.000													12	312	3	26
2	7	R271	EAST BARRIER	E	20							12	3.000													12	312	3	50
2	5	R272	EAST BARRIER	E	20							19	2.000													19	219	2	40
2	7	R273	EAST BARRIER	E	20							19	2.000													19	219	2	78
3	3	R275	EAST BARRIER	E	13	S						0	6.000	1	1.000	0	6.000	1	1.000							3	103	8	4
7	5	R277	EAST BARRIER	E	20							19	2.000													19	219	2	140
UNIT 3																													
7	5	R351	EAST BARRIER	E	20							21	6.000													21	621	6	157
20	5	R352	EAST BARRIER	E	10							0	0.000	1	2.000	1	6.000	0	10.000							4	84	3	89
92	5	R353	EAST BARRIER	E	6							3	5.000	0	10.000	0	0.000	0	0.000							4	34	1	392
92	7	R354	EAST BARRIER	E	6							3	5.000	1	2.000	0	0.000	0	0.000							4	74	5	831
8	3	R355	EAST BARRIER	E	13	S						1	0.000	2	0.000	1	0.000	2	0.000							6	86	6	20
18	3	R356	EAST BARRIER	E	10							0	0.000	0	9.000	0	4.000	0	0.000							1	101	8	11
12	3	R357	EAST BARRIER	E	10							0	0.000	0	9.000	0	5.000	0	0.000							1	111	9	8
3	3	R358	EAST BARRIER	E	10							0	0.000	0	9.000	1	3.000	0	0.000							2	92	7	3
2	3	R359	EAST BARRIER	E	20							3	1.000													3	13	1	2
2	3	R360	EAST BARRIER	E	20							1	1.000													1	11	1	1
2	3	R361	EAST BARRIER	E	20							3	9.000													3	93	9	3
72	5	R362	EAST BARRIER	E	10							0	0.000	1	2.000	0	11.000	0	10.000							4	13	8	275
10	3	R363	EAST BARRIER	E	13	S						1	0.000	2	1.000	1	0.000	2	1.000							6	106	8	25
4	3	R364	EAST BARRIER	E	20							1	5.000													1	51	5	2
2	5	R365	EAST BARRIER	E	20							8	9.000													8	98	9	18
2	7	R366	EAST BARRIER	E	20							8	9.000													8	98	9	36
93	3	R367	EAST BARRIER	E	13	S						0	6.000	0	5.250	0	6.000	0	5.250							2	72	5	85
3	5	R370	EAST BARRIER	E	20							1	8.000													1	81	8	5
3	7	R371	EAST BARRIER	E	20							1	8.000													1	81	8	10
2	5	R372	EAST BARRIER	E	20							6	3.000													6	36	3	13
2	7	R373	EAST BARRIER	E	20							6	3.000													6	36	3	26
4	5	R374	EAST BARRIER	E	20							2	1.000													2	12	1	9
3	3	R375	EAST BARRIER	E	13	S						0	6.000	0	10.000	0	6.000	0	10.000							3	43	2	4
3	3	R376	EAST BARRIER	E	13	S						0	6.000	0	8.000	0	6.000	0	8.000							3	02	10	3
2	7	R377	EAST BARRIER	E	20							17	2.000													17	217	2	70
7	5	R378	EAST BARRIER	E	20							22	4.000													22	422	4	163
2	5	R379	EAST BARRIER	E	20							17	2.000													17	217	2	36

BILL OF REINFORCING STEEL																										
NO.	REQ'D.	MARK NO.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
												B	C	D	E	F	H	K								
												FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.
EAST BARRIER CURB																										
UNIT 4																										
7	5	R451	EAST BARRIER	E	20							17	6.000									17	617	6	128	
12	5	R452	EAST BARRIER	E	10							0	0.000	1	2.000	1	6.000	0	10.000				4	84	3	53
82	5	R453	EAST BARRIER	E	6							3	5.000	0	10.000	0	0.000	0	0.000				4	34	1	349
82	7	R454	EAST BARRIER	E	6							3	5.000	1	2.000	0	0.000	0	0.000				4	74	5	740
12	3	R456	EAST BARRIER	E	10							0	0.000	0	9.000	0	4.000	0	0.000				1	101	8	8
6	3	R457	EAST BARRIER	E	10							0	0.000	0	9.000	0	5.000	0	0.000				1	111	9	4
70	5	R462	EAST BARRIER	E	10							0	0.000	1	2.000	0	11.000	0	10.000				4	13	8	268
10	3	R463	EAST BARRIER	E	13	S						1	0.000	2	1.000	1	0.000	2	1.000				6	106	8	25
4	3	R464	EAST BARRIER	E	20							1	5.000										1	51	5	2
93	3	R467	EAST BARRIER	E	13	S						0	6.000	0	5.250	0	6.000	0	5.250				2	72	5	85
2	5	R470	EAST BARRIER	E	20							1	5.000										1	51	5	3
2	7	R471	EAST BARRIER	E	20							1	5.000										1	51	5	6
2	5	R472	EAST BARRIER	E	20							13	5.000										13	513	5	28
2	7	R473	EAST BARRIER	E	20							13	5.000										13	513	5	55
4	5	R474	EAST BARRIER	E	20							2	1.000										2	12	1	9
3	3	R475	EAST BARRIER	E	13	S						0	6.000	0	8.000	0	6.000	0	8.000				3	02	10	3
2	7	R476	EAST BARRIER	E	20							10	10.000										10	1010	10	44
2	5	R477	EAST BARRIER	E	20							6	10.000										6	106	10	14
2	7	R478	EAST BARRIER	E	20							6	10.000										6	106	10	28
7	5	R479	EAST BARRIER	E	20							20	5.000										20	520	5	149
2	5	R480	EAST BARRIER	E	20							10	10.000										10	1010	10	23
UNIT 5																										
7	5	R551	EAST BARRIER	E	20							10	6.000										10	610	6	77
39	5	R553	EAST BARRIER	E	6							3	5.000										3	53	5	139
39	7	R554	EAST BARRIER	E	6							3	5.000	0	10.000	0	0.000	0	0.000				4	34	1	326
39	5	R562	EAST BARRIER	E	10							0	0.000	1	2.000	0	11.000	0	10.000				4	13	8	149
51	3	R567	EAST BARRIER	E	13	S						0	6.000	0	5.250	0	6.000	0	5.250				2	72	5	46
2	5	R570	EAST BARRIER	E	20							10	6.000										10	610	6	22
2	7	R571	EAST BARRIER	E	20							10	6.000										10	610	6	43
2	5	R572	EAST BARRIER	E	20							7	0.000										7	07	0	15
2	7	R573	EAST BARRIER	E	20							7	0.000										7	07	0	29
3	3	R575	EAST BARRIER	E	13	S						0	6.000	1	0.000	0	6.000	1	0.000				3	83	6	4
3	3	R576	EAST BARRIER	E	13	S						0	6.000	0	7.000	0	6.000	0	7.000				2	102	8	3
7	5	R577	EAST BARRIER	E	20							7	0.000										7	07	0	51
UNIT 6																										
7	5	R651	EAST BARRIER	E	20							24	8.000										24	824	8	180
6	5	R652	EAST BARRIER	E	10							0	0.000	1	2.000	1	6.000	0	10.000				4	84	3	27
52	5	R653	EAST BARRIER	E	6							3	5.000	0	10.000	0	0.000	0	0.000				4	34	1	221
52	7	R654	EAST BARRIER	E	6							3	5.000	1	2.000	0	0.000	0	0.000				4	74	5	469
6	3	R656	EAST BARRIER	E	10							0	0.000	0	9.000	0	4.000	0	0.000				1	101	8	4
3	3	R657	EAST BARRIER	E	10							0	0.000	0	9.000	0	5.000	0	0.000				1	111	9	2
46	5	R662	EAST BARRIER	E	10							0	0.000	1	2.000	0	11.000	0	10.000				4	13	8	176
5	3	R663	EAST BARRIER	E	13	S						1	0.000	2	1.000	1	0.000	2	1.000				6	106	8	13
2	3	R664	EAST BARRIER	E	20							1	5.000										1	51	5	1
2	5	R665	EAST BARRIER	E	20							8	9.000										8	98	9	18
2	7	R666	EAST BARRIER	E	20							8	9.000										8	98	9	36
60	3	R667	EAST BARRIER	E	13	S						0	6.000	0	5.250	0	6.000	0	5.250				2	72	5	55
2	5	R670	EAST BARRIER	E	20							13	3.000										13	313	3	28
2	7	R671	EAST BARRIER	E	20							13	3.000										13	313	3	54
2	5	R674	EAST BARRIER	E	20							2	1.000										2	12	1	4
3	3	R675	EAST BARRIER	E	13	S						0	6.000	1	0.000	0	6.000	1	0.000				3	83	6	4

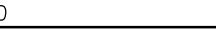
BILL OF REINFORCING STEEL																												
NO.	REQ'D.	MARK NO.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS										NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT				
												B		C		D		E		F					H		K	
												FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.
WEST BARRIER CURB																												
UNIT 1																												
7	5	R101	WEST BARRIER	E	20						22	1.000								161								
14	5	R102	WEST BARRIER	E	10						0	0.000	1	2.000	1	7.000	0	10.000		4	94	4	63					
47	5	R103	WEST BARRIER	E	6						3	5.000	0	10.000	0	0.000	0	0.000		4	34	1	200					
47	7	R104	WEST BARRIER	E	6						3	5.000	1	2.000	0	0.000	0	0.000		4	74	5	424					
8	3	R105	WEST BARRIER	E	13	S					1	0.000	2	8.000	1	0.000	2	8.000		8	07	10	24					
12	3	R106	WEST BARRIER	E	10						0	0.000	0	9.000	0	4.000	0	0.000		1	10	1	8					
9	3	R107	WEST BARRIER	E	10						0	0.000	0	9.000	0	5.000	0	0.000		1	11	1	9					
3	3	R108	WEST BARRIER	E	10						0	0.000	0	9.000	1	6.000	0	0.000		3	02	10	3					
2	3	R109	WEST BARRIER	E	20						3	1.000								3	13	1	2					
2	3	R110	WEST BARRIER	E	20						1	1.000								1	11	1	1					
2	5	R111	WEST BARRIER	E	20						3	9.000								3	93	9	8					
33	5	R112	WEST BARRIER	E	10						0	0.000	1	2.000	0	11.000	0	10.000		4	13	8	126					
5	3	R113	WEST BARRIER	E	13	S					1	0.000	2	1.000	1	0.000	2	1.000		6	10	6	8	13				
2	3	R114	WEST BARRIER	E	20						1	5.000								1	51	5	1					
2	5	R115	WEST BARRIER	E	20						9	1.000								9	19	1	19					
2	7	R116	WEST BARRIER	E	20						9	1.000								9	19	1	37					
45	3	R117	WEST BARRIER	E	13	S					0	6.000	0	5.250	0	6.000	0	5.250		2	72	5	41					
2	5	R118	WEST BARRIER	E	20						3	10.000								3	103	10	8					
2	7	R119	WEST BARRIER	E	20						3	10.000								3	103	10	16					
2	5	R120	WEST BARRIER	E	20						2	7.000								2	72	7	5					
2	7	R121	WEST BARRIER	E	20						2	4.000								2	42	4	10					
2	5	R124	WEST BARRIER	E	20						2	1.000								2	12	1	4					
4	3	R127	WEST BARRIER	E	13	S					1	1.000	1	3.000	1	1.000	1	3.000		5	45	2	8					
3	5	R128	WEST BARRIER	E	27						0	0.000	1	6.000	1	2.000	2	10.000	0	0	0	10	0	17				
UNIT 2																												
7	5	R201	WEST BARRIER	E	20						18	0.000								18	0	18	0	131				
7	5	R202	WEST BARRIER	E	20						12	0.000								12	0	12	0	88				
65	5	R203	WEST BARRIER	E	6						3	5.000	0	10.000	0	0.000	0	0.000		4	34	1	277					
65	7	R204	WEST BARRIER	E	6						3	5.000	1	2.000	0	0.000	0	0.000		4	74	5	587					
65	5	R212	WEST BARRIER	E	10						0	0.000	1	2.000	0	11.000	0	10.000		4	13	8	249					
93	3	R217	WEST BARRIER	E	13	S					0	6.000	0	5.250	0	6.000	0	5.250		2	72	5	85					
2	5	R220	WEST BARRIER	E	20						18	0.000								18	0	18	0	38				
2	7	R221	WEST BARRIER	E	20						17	7.000								17	7	7	72					
2	5	R222	WEST BARRIER	E	20						12	0.000								12	0	12	0	25				
2	7	R223	WEST BARRIER	E	20						12	5.000								12	5	12	5	51				
3	3	R225	WEST BARRIER	E	13	S					0	6.000	0	9.000	0	6.000	0	9.000		3	23	0	3					
UNIT 3																												
7	5	R301	WEST BARRIER	E	20						27	10.000								27	10	27	10	203				
20	5	R302	WEST BARRIER	E	10						0	0.000	1	2.000	1	7.000	0	10.000		4	94	4	90					
119	5	R303	WEST BARRIER	E	6						3	5.000	0	10.000	0	0.000	0	0.000		4	34	1	507					
119	7	R304	WEST BARRIER	E	6						3	5.000	1	2.000	0	0.000	0	0.000		4	74	5	1074					
8	3	R305	WEST BARRIER	E	13	S					1	0.000	2	8.000	1	0.000	2	8.000		8	07	10	24					
18	3	R306	WEST BARRIER	E	10						0	0.000	0	9.000	0	4.000	0	0.000		1	10	1	8	11				
12	3	R307	WEST BARRIER	E	10						0	0.000	0	9.000	0	5.000	0	0.000		1	11	1	9	8				
3	3	R308	WEST BARRIER	E	10						0	0.000	0	9.000	1	6.000	0	0.000		3	02	10	3					
2	3	R309	WEST BARRIER	E	20						3	1.000								3	13	1	2					
2	3	R310	WEST BARRIER	E	20						1	1.000								1	11	1	1					
2	5	R311	WEST BARRIER	E	20						3	9.000								3	93	9	8					
99	5	R312	WEST BARRIER	E	10						0	0.000	1	2.000	0	11.000	0	10.000		4	13	8	379					
10	3	R313	WEST BARRIER	E	13	S					1	0.000	2	1.000	1	0.000	2	1.000		6	10	6	8	25				
4	3	R314	WEST BARRIER	E	20						1	5.000								1	51	5	2					
2	5	R315	WEST BARRIER	E	20						9	1.000								9	19	1	19					
2	7	R316	WEST BARRIER	E	20						9	1.000								9	19	1	37					
129	3	R317	WEST BARRIER	E	13	S					0	6.000	0	5.250	0	6.000	0	5.250		2	72	5	117					
2	5	R318	WEST BARRIER	E	20						9	4.000								9	49	4	19					
2	7	R319	WEST BARRIER	E	20						9	10.000								9	109	10	40					
2	5	R320	WEST BARRIER	E	20						17	2.000								17	2	17	2	36				
2	7	R321	WEST BARRIER	E	20						16	9.000								16	9	16	9	68				
2	5	R322	WEST BARRIER	E	20						8	10.000								8	10	8	10	18				
2	5	R323	WEST BARRIER	E	20						8	10.000								8	10	8	10	18				
7	5	R326	WEST BARRIER	E	20						26	3.000								26	3	26	3	192				
4	5	R324	WEST BARRIER	E	20						2	1.000								2	12	1	9					
6	3	R325	WEST BARRIER	E	13	S					0	6.000	0	9.000	0	6.000	0	9.000		3	23	0	7					
4	3	R327	WEST BARRIER	E	13	S					1	1.000	1	3.000	1	1.000	1	3.000			64	5	2	8				
3	5	R328	WEST BARRIER	E	27						0	0.000	1	6.000	1	2.000	2	10.000	0	0.000	0	10.000	0	10.000	1			

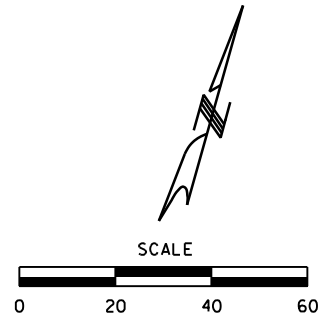
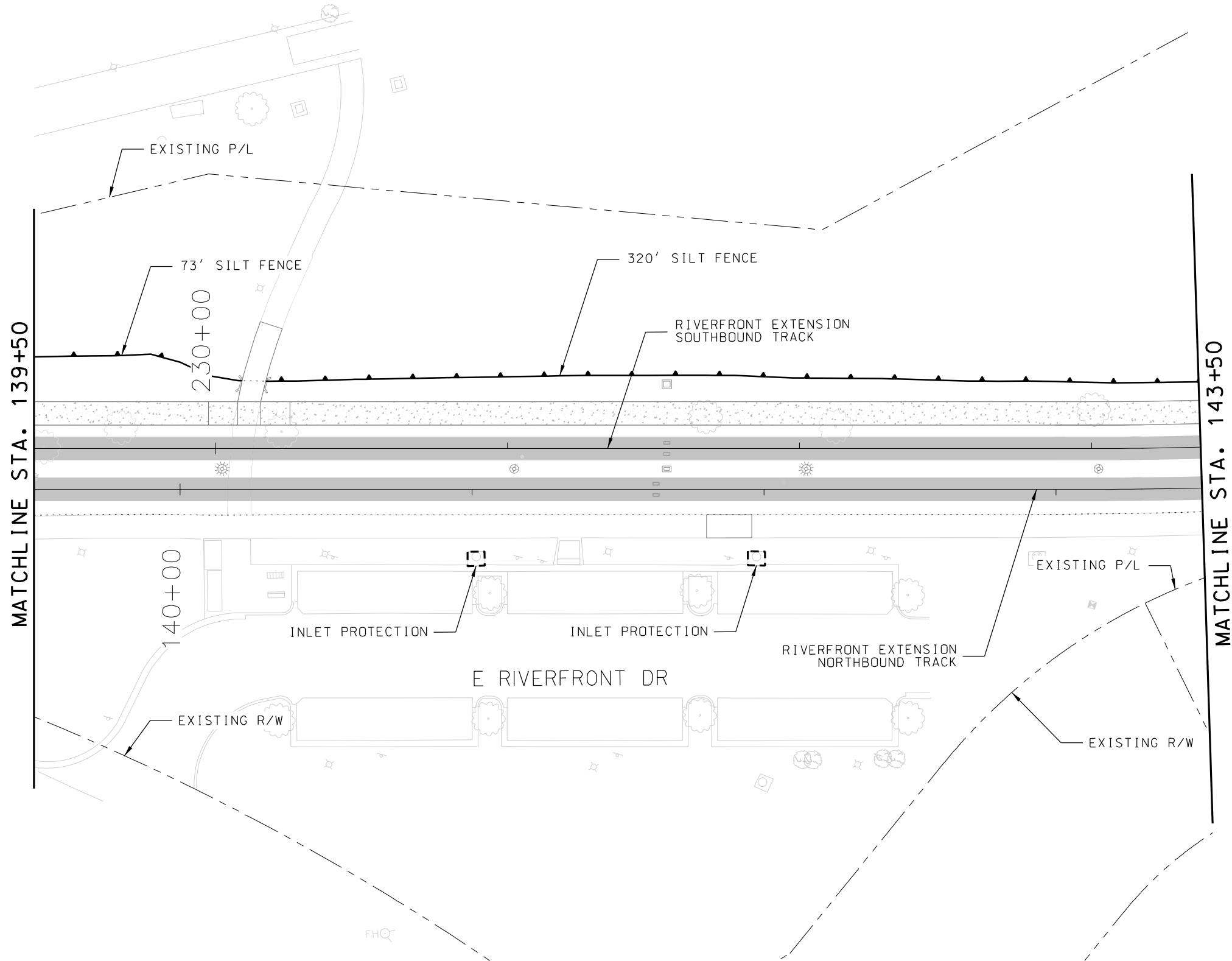
BILL OF REINFORCING STEEL																												
NO.	REQ'D.	MARK NO.	SIZE	MARK	LOCATION	EPOXY (E)	SHAPE NO.	STIRRUP (S)	SUBSTR. (X)	VARIES (V)	NO. EACH	DIMENSIONS								NOMINAL LENGTH	ACTUAL LENGTH	WEIGHT						
												B		C		D		E					F		H		K	
												FT.	IN.	FT.	IN.	FT.	IN.	FT.	IN.				FT.	IN.	FT.	IN.	FT.	IN.
WEST BARRIER CURB																												
UNIT 4																												
7	5	R401	WEST BARRIER	E	20						11	6.000								11	6	84						
6	5	R402	WEST BARRIER	E	10						0	0.000	1	2.000	1	7.000	0	10.000		4	9	27						
81	5	R403	WEST BARRIER	E	6						3	5.000	0	10.000	0	0.000	0	0.000		4	3	345						
81	7	R404	WEST BARRIER	E	6						3	5.000	1	2.000	0	0.000	0	0.000		4	7	731						
6	3	R406	WEST BARRIER	E	10						0	0.000	0	9.000	0	4.000	0	0.000		1	10	4						
3	3	R407	WEST BARRIER	E	10						0	0.000	0	9.000	0	5.000	0	0.000		1	11	2						
75	5	R412	WEST BARRIER	E	10						0	0.000	1	2.000	0	11.000	0	10.000		4	13	287						
5	3	R413	WEST BARRIER	E	13	S					1	0.000	2	1.000	1	0.000	2	1.000		6	10	13						
2	3	R414	WEST BARRIER	E	20						1	5.000								1	5	1						
105	3	R417	WEST BARRIER	E	13	S					0	6.000	0	5.250	0	6.000	0	5.250		2	7	95						
2	5	R418	WEST BARRIER	E	20						15	4.000								15	4	32						
2	7	R419	WEST BARRIER	E	20						15	4.000								15	4	63						
2	5	R420	WEST BARRIER	E	20						12	0.000								12	0	25						
2	7	R421	WEST BARRIER	E	20						11	6.000								11	6	47						
2	5	R422	WEST BARRIER	E	20						7	11.000								7	1	17						
2	7	R423	WEST BARRIER	E	20						7	11.000								7	1	32						
2	5	R424	WEST BARRIER	E	20						2	1.000								2	1	4						
3	3	R425	WEST BARRIER	E	13	S					0	6.000	1	2.000	0	6.000	1	2.000		4	0	4						
7	5	R426	WEST BARRIER	E	20						25	10.000								25	10	189						
UNIT 5																												
7	5	R501	WEST BARRIER	E	20						8	11.000								8	1	65						
7	5	R502	WEST BARRIER	E	20						9	4.000								9	4	68						
39	5	R503	WEST BARRIER	E	6						3	5.000	0	10.000	0	0.000	0	0.000		4	3	166						
39	7	R504	WEST BARRIER	E	6						3	5.000	1	2.000	0	0.000	0	0.000		4	7	352						
39	5	R512	WEST BARRIER	E	10						0	0.000	1	2.000	0	11.000	0	10.000		4	13	149						
54	3	R517	WEST BARRIER	E	13	S					0	6.000	0	5.250	0	6.000	0	5.250		2	7	49						
2	5	R520	WEST BARRIER	E	20						8	9.000								8	9	18						
2	7	R521	WEST BARRIER	E	20						8	11.000								8	1	36						
2	5	R522	WEST BARRIER	E	20						9	3.000								9	3	19						
2	7	R523	WEST BARRIER	E	20						9	1.000								9	1	37						
3	3	R525	WEST BARRIER	E	13	S					0	6.000	1	2.000	0	6.000	1	2.000		4	0	4						
UNIT 6																												
7	5	R601	WEST BARRIER	E	20						25	6.000								25	6	186						
14	5	R602	WEST BARRIER	E	10						0	0.000	1	2.000	1	7.000	0	10.000		4	9	63						
55	5	R603	WEST BARRIER	E	6						3	5.000	0	10.000	0	0.000	0	0.000		4	3	234						
55	7	R604	WEST BARRIER	E	6						3	5.000	1	2.000	0	0.000	0	0.000		4	7	497						
8	3	R605	WEST BARRIER	E	13	S					1	0.000	2	8.000	1	0.000	2	8.000		8	0	24						
12	3	R606	WEST BARRIER	E	10						0	0.000	0	9.000	0	4.000	0	0.000		1	10	8						
9	3	R607	WEST BARRIER	E	10						0	0.000	0	9.000	0	5.000	0	0.000		1	1	9						
3	3	R608	WEST BARRIER	E	10						0	0.000	0	9.000	1	6.000	0	0.000		3	0	3						
2	3	R609	WEST BARRIER	E	20						3	1.000								3	1	2						
2	3	R610	WEST BARRIER	E	20						1	1.000								1	1	1						
2	5	R611	WEST BARRIER	E	20						3	9.000								3	9	8						
41	5	R612	WEST BARRIER	E	10						0	0.000	1	2.000	0	11.000	0	10.000		4	13	157						
5	3	R613	WEST BARRIER	E	13	S					1	0.000	2	1.000	1	0.000	2	1.000		6	10	13						
2	3	R614	WEST BARRIER	E	20						1	5.000								1	5	1						
2	5	R615	WEST BARRIER	E	20						9	1.000								9	1	19						
2	7	R616	WEST BARRIER	E	20						9	1.000								9	1	37						
51	3	R617	WEST BARRIER	E	13	S					0	6.000	0	5.250	0	6.000	0	5.250		2	7	46						
2	5	R620	WEST BARRIER	E	20						9	9.000								9	9	20						
2	7	R621	WEST BARRIER	E	20						9	7.000								9	7	39						
2	5	R624	WEST BARRIER	E	20						2	1.000								2	1	4						
3	3	R625	WEST BARRIER	E	13	S					0	6.000	1	2.000	0	6.000	1	2.000		4	0	4						
4	3	R627	WEST BARRIER	E	13	S					1	1.000	1	3.000	1	1.000	1	3.000		5	4	8						
3	5	R628	WEST BARRIER	E	27						0	0.000	1	6.000	1	2.000	2	10.000	0	0.000	0	10.000	10.000	5	6	17		



LEGEND	
SILT FENCE	
INLET PROTECTION	
GRADING LIMITS	

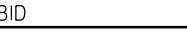
- GENERAL NOTES
- CONTRACTOR TO PLACE INLET PROTECTION AT ALL EXISTING INLETS THAT WILL BE AFFECTED BY CONSTRUCTION. THESE SHALL BE PLACED IN ACCORDANCE WITH CITY OF KANSAS CITY, MISSOURI SPECIFICATIONS.

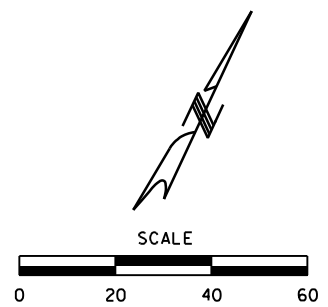
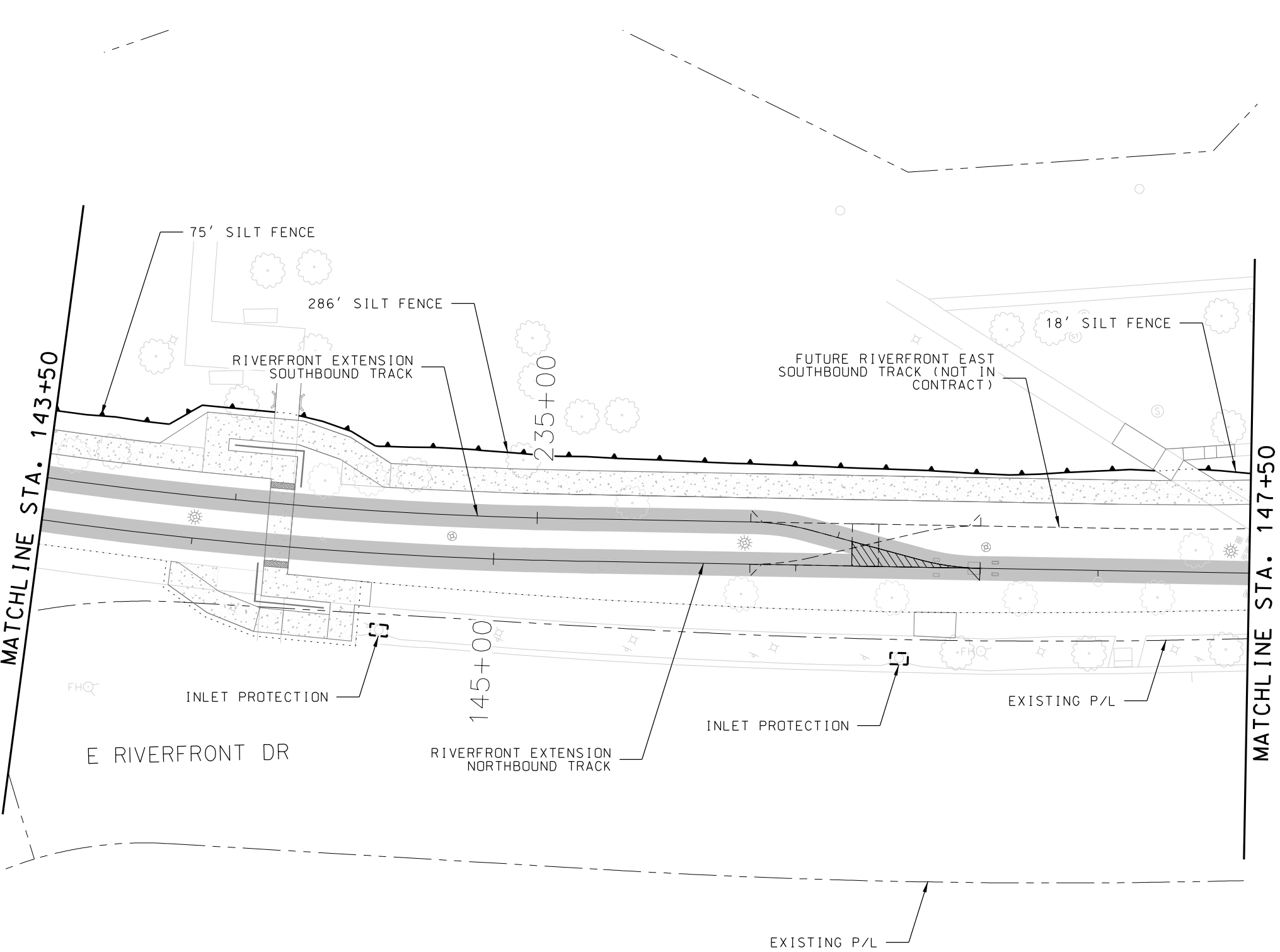
REV	DATE	DESCRIPTION	DESIGNED BY	JWR			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'		
			CHECKED BY	SCB				HDR Engineering, Inc.		FILENAME: EC101.dgn				
			DRAWN BY	MMO				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		CONTRACT NO.: CONTRACT NO. ***				
			CHECKED BY	JWR				NOT FOR CONSTRUCTION		VOLUME: 1				
			APPROVED BY	NKS						DRAWING NO.: EC101				
PLOT DATE: 12/22/2022			4:34:06 PM				DATE	12-23-2022		EROSION CONTROL PLAN STA 135+50 TO STA 139+50		SHEET NO.: 326		



LEGEND	
SILT FENCE	
INLET PROTECTION	
GRADING LIMITS	

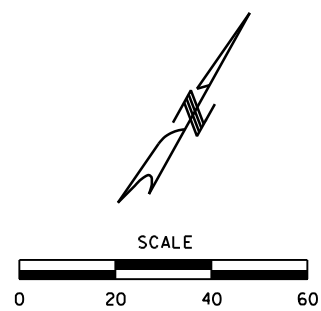
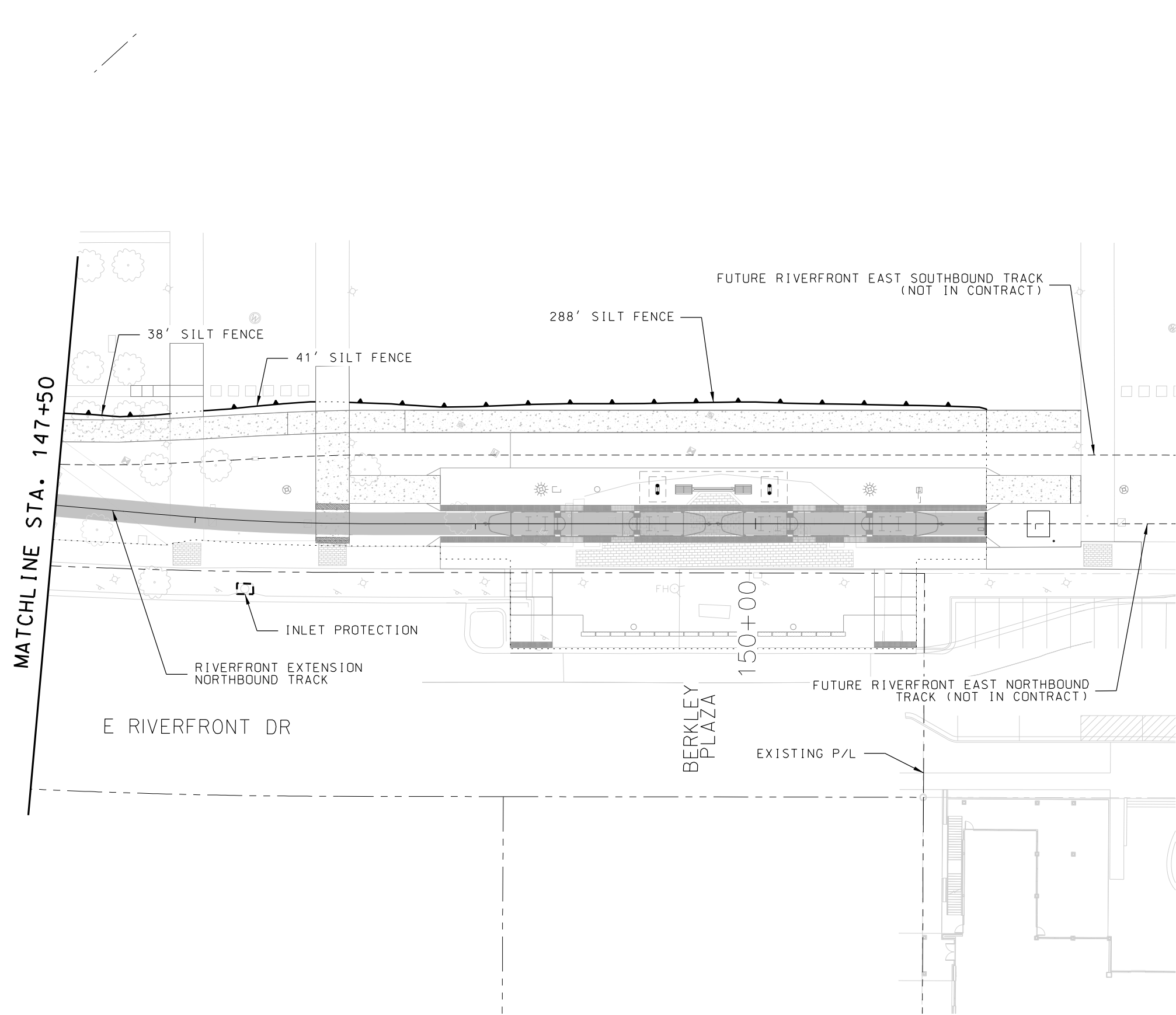
GENERAL NOTES	
1.	CONTRACTOR TO PLACE INLET PROTECTION AT ALL EXISTING INLETS THAT WILL BE AFFECTED BY CONSTRUCTION. THESE SHALL BE PLACED IN ACCORDANCE WITH CITY OF KANSAS CITY, MISSOURI SPECIFICATIONS.

REV	DATE	DESCRIPTION	DESIGNED BY	JWR			ISSUED FOR BID  HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	EROSION CONTROL PLAN STA 139+50 TO STA 143+50	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	SCB							FILENAME:	
			DRAWN BY	MMO							EC102.dgn	
			CHECKED BY	JWR							CONTRACT NO.:	
			APPROVED BY	NKS							CONTRACT NO. ***	
					VOLUME:							
					1							
PLOT DATE: 12/22/2022			DATE 12-23-2022		DRAWING NO.:						SHEET NO.:	
4:34:12 PM											EC102	327
						NOT FOR CONSTRUCTION						



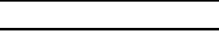
- LEGEND
- SILT FENCE
- INLET PROTECTION
- GRADING LIMITS
- GENERAL NOTES
1. CONTRACTOR TO PLACE INLET PROTECTION AT ALL EXISTING INLETS THAT WILL BE AFFECTED BY CONSTRUCTION. THESE SHALL BE PLACED IN ACCORDANCE WITH CITY OF KANSAS CITY, MISSOURI SPECIFICATIONS.

REV		DATE	DESCRIPTION	DESIGNED BY	JWR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":	
				CHECKED BY	SCB							1" = 20'	
				DRAWN BY	MMO			10450 Holmes Road				FILENAME:	
				CHECKED BY	JWR			Suite 600				EC103.dgn	
				APPROVED BY	NKS			Kansas City, MO 64131-3471				CONTRACT NO.:	
						816-360-2700			CONTRACT NO. ***				
						Certificate of Authority: 000856			VOLUME:				
									DRAWING NO.:				
									SHEET NO.:				
									EC103				
									328				



LEGEND	
SILT FENCE	
INLET PROTECTION	
GRADING LIMITS	

- GENERAL NOTES
- CONTRACTOR TO PLACE INLET PROTECTION AT ALL EXISTING INLETS THAT WILL BE AFFECTED BY CONSTRUCTION. THESE SHALL BE PLACED IN ACCORDANCE WITH CITY OF KANSAS CITY, MISSOURI SPECIFICATIONS.

REV	DATE	DESCRIPTION	DESIGNED BY	JWR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	EROSION CONTROL PLAN STA 147+50 TO END	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	SCB				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			FILENAME:	
			DRAWN BY	MMO							CONTRACT NO.:	
			CHECKED BY	JWR							CONTRACT NO. ***	
			APPROVED BY	NKS			VOLUME:					
								DRAWING NO.:			SHEET NO.:	
PLOT DATE: 12/22/2022		4:34:21PM		DATE	12-23-2022		NOT FOR CONSTRUCTION				EC104	329

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. FEEDER CABLES AND JUMPER WIRES TO BE INSULATED FOR 2,000 VOLTS AND TO OPERATE AT 90°C.
3. 4mm SOLID WIRE TO BE USED FOR INCLINED PENDULUM HANGERS AND CURVE PENDULUM HANGERS (PULLOVERS).
5. ALL GUY WIRE SHALL CONFORM TO ASTM A475 AND HAVE A CLASS C COAT OF GALVANIZING.
6. ALL ENDS OF PHILLYSTRAN SYNTHETIC ROPE TO HAVE SEALING CAP TO PREVENT WATER INTRUSION.

CONDUCTORS	CONTACT WIRE	SPAN WIRE				STITCH ROPE	SOLID HANGER WIRE	FEED TAP WIRE	SUPPLEMENTARY FEEDER CABLE	FLEXIBLE HANGER WIRE
SIZE	350 KCMIL	1/4	5/16	3/8	1/2	11 MM	4 MM	250 KCMIL	350 KCMIL	3/16
MATERIAL	COPPER	GALVANIZED STEEL	GALVANIZED STEEL	GALVANIZED STEEL	GALVANIZED STEEL	PHILLYSTRAN	STAINLESS STEEL	COPPER	COPPER	BRONZE
MAKE-UP/ DESCRIPTION	SOLID GROOVED TROLLEY WIRE	7 WIRE STRAND	7 WIRE STRAND	7 WIRE STRAND	7 WIRE STRAND	BONDED JACKET TO SYNTHETIC ROPE	SOLID	61 WIRE	37 WIRE	7X7 CONCENTRIC STAND CLASS G STRANDING
TYPE	HARD DRAWN	SIEMENS-MARTIN	EHS	EHS	EHS	HPTG 11200I	---	---	---	ALLOY 80 BRONZE
STRAND DIAMETER (IN)	N/A	0.080	0.109	0.120	0.165	---	---	---	---	0.1875
OVERALL DIAMETER (IN)	0.620	0.250	0.3125	0.375	0.500	0.433	0.157 (4mm)	0.576	0.941	0.1875
CROSS SECTIONAL AREA (IN²)	0.2758	0.038	0.065	0.079	0.150	0.147	0.019	0.235	0.665	---
ASTM STANDARD	B47	A475	A475	A475	A475	---	---	B8, B33	B3, B496	B173
INSULATION	---	---	---	---	---	POLYURETHANE	---	0.109" EPR / 0.06" CROSS-LINKED POLYOLEFIN	0.075" EPR 0.065" LSZH JACKET	---
WEIGHT - NO ICE (LBS/FT)	1.063	0.121	0.205	0.273	0.517	0.07	0.057	0.772	1.286	0.081
BREAKING LOAD (LBS)	11,800	3,150	11,200	15,400	26,700	11,200	1,123	7,940	7,669	1,400
MODULUS OF ELASTICITY (PSI)	16 x 10 ⁶	29 x 10 ⁶	29 x 10 ⁶	29 x 10 ⁶	29 x 10 ⁶	---	28 x 10 ⁶	16 x 10 ⁶	16 x 10 ⁶	16 x 10 ⁶
THERMAL COEFFICIENT (1/°F)	9.4 x 10 ⁻⁶	6.7 x 10 ⁻⁶	6.7 x 10 ⁻⁶	6.7 x 10 ⁻⁶	6.7 x 10 ⁻⁶	---	17.3 x 10 ⁻⁶	9.4 x 10 ⁻⁶	9.4 x 10 ⁻⁶	9.4 x 10 ⁻⁶
NORMAL TENSION @ 60°F - NO WIND	2480	---	---	---	---	---	---	---	1550	---
WEIGHT WITH 1/2" RADIAL ICE (LBS/FT)	1.760	0.589	0.7128	0.819	1.142	0.653	0.467	1.444	2.895	0.510
TYPICAL SECTION										

REV

DATE

DESCRIPTION

DESIGNED BY

PFW

CHECKED BY

BP

DRAWN BY

PFW

CHECKED BY

BP

APPROVED BY

NKS

PLOT DATE:

12/21/2022

1:11:58 PM

DATE

12/23/2022

ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.

The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS

10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
TECHNICAL SHEETS
CONDUCTOR PARTICULARS

SCALE FOR 22"x34":
NO SCALE

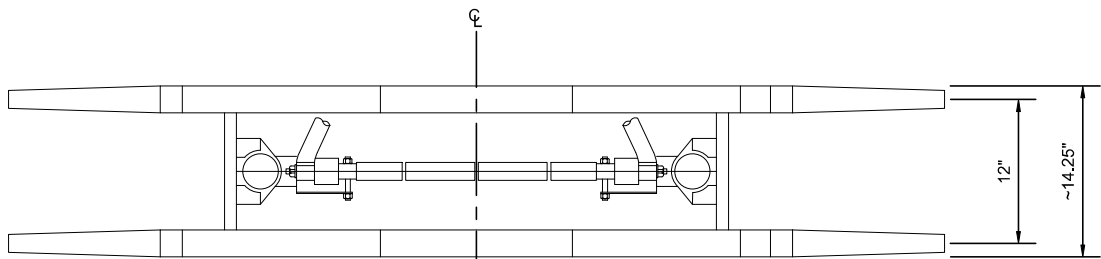
FILENAME:
Y004.dwg

CONTRACT NO.:
CONTRACT NO. ###

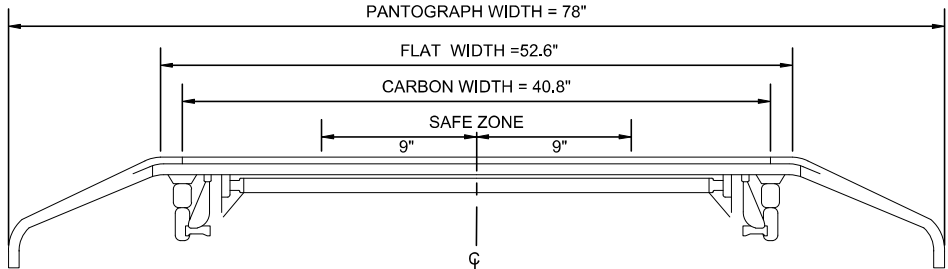
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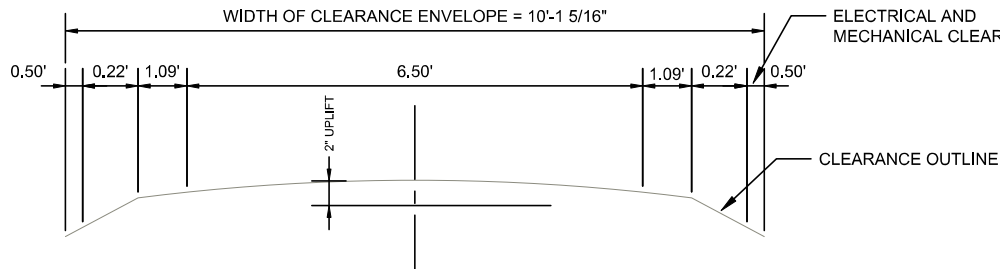
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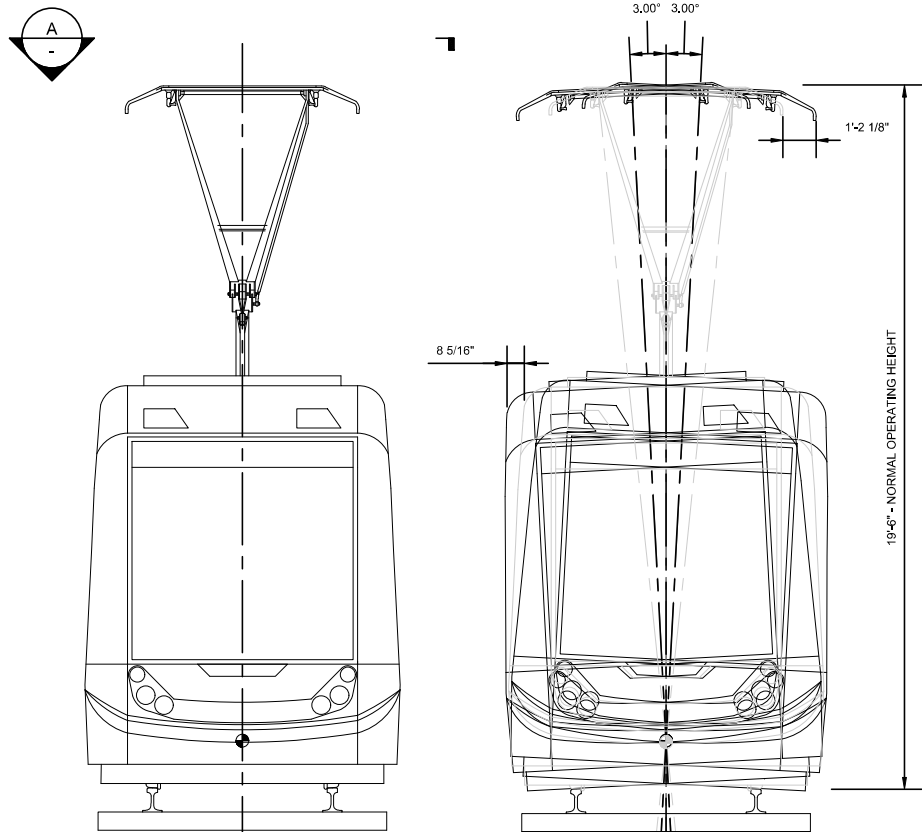
A PLAN VIEW PAN HEAD
SCALE: NTS



SIDE VIEW PAN HEAD
SCALE: NTS



PANTOGRAPH CLEARANCE OUTLINE
SCALE: NTS



END VIEW STREETCAR STATIC/DYNAMIC POSITION
SCALE: NTS

NOTES:

- VALUES SHOWN ARE CONSERVATIVE AND BASED ON INDUSTRY PRACTICE.
- SAFE OPERATING ZONE ON PANTOGRAPH HEAD IS BASED ON VEHICLE ROLL OF 3° AND 55 MPH WINDS WITH 10 MPH GUST BLOWOFF FOR A CONSTANT TENSIONED CONTACT WIRE WITH 2,480 LBS. TENSION.
- BLOWOFF IS BASED ON A SPAN LENGTH OF 125 FEET. MAXIMUM TYPICAL SPAN LENGTH IS 120 FEET.
- MAXIMUM STAGGER TO BE 9 INCHES. MAXIMUM MID-ORDINATE TO BE 18 INCHES WITH A 9 INCH OFFSET AT PULLOVERS, PROVIDING 9" STAGGER AT MID-ORDINATE.
- PANTOGRAPH CENTER IS LOCATED DIRECTLY OVER THE TRUCK KING PIN AND RIDES ALONG THE TRACK CENTER LINE.
- ELECTRICAL AND MECHANICAL CLEARANCE TO BE ADHERED TO. IF UNABLE TO MEET REQUIREMENTS, TAKE DIRECTION FROM THE ENGINEER.

KANSAS CITY STREETCAR PANTOGRAPH SECURITY			
SINGLE CONTACT WIRE			
TRACK PARAMETERS			
ALIGNMENT		0.50	IN
GAGE TOLERANCE		0.50	IN
RAIL WEAR		0.38	IN
WHEEL FL WEAR		0.36	IN
WHEEL/RAIL CLEARANCE		0.24	IN
CROSS LEVEL EFFECT			
CROSS LEVEL TOLERANCE		0.50	IN
TRACK GAGE		56.50	IN
RAIL HEAD WIDTH		2.71	IN
TOTAL CROSS LEVEL EFFECT		2.48	IN
PANTOGRAPH PARAMETERS			
WIDTH OVER HORNS		78.00	IN
WIDTH ON FLAT		52.60	IN
CARBON WIDTH		40.80	IN
PANTO SWAY		1.50	IN
HORIZ HORN LENGTH		12.70	IN
MAX OPERATING HEIGHT		20.50	FT
MIN OPERATING HEIGHT		13.50	FT
VEHICLE PARAMETERS			
ROLL AT:		3.00	DEGREES
		10.95	IN
ROLL POINT ABOVE TOR		25.00	IN
LATERAL MOVEMENT		2.00	IN
TOTAL VEHICLE/PANTOGRAPH MOVEMENT			
TOTAL MOVEMENT		11.69	IN
50% REDUCTION INTO WIND (PER AREMA)		5.85	IN
WIRE PARAMETERS			
	DIAM. IN	WT/FT	TENSION #
CW	0.62	1.06	2480
CW HEIGHT FT		19.50	
SPAN LENGTH (TANGENT)		125.00	
WIND @ OPERATING CONDITION		55	MPH
MAX WIND (W/ 10% GUST)		60.50	MPH
ALLOWABLE MOVEMENT BEFORE HORN		26.30	IN
TOTAL WIRE MOVEMENT			
FROM PANTO CL		10.42	IN
FINAL LOCATION OF WIRE (BLOWOFF + VEHICLE SWAY)		15.88	IN
ALLOWABLE STAGGER		20.00	IN
ASSIGNED STAGGER		9.00	IN

BLOW OFF CALCULATION	
ARRANGEMENT	SINGLE WIRE
TYPE	CW
DIAMETER (IN)	0.62
WEIGHT (LBS/FT)	1.06
HANGER WT (LBS/FT)	0
SYSTEM WT (LBS/FT)	1.06
TENSION (LBS)	2480
SPAN (FT)	125
SYSTEM HEIGHT (FT)	N/A
WIND SPEED (MPH)	60.5
WIND PRESSURE (LBS/SQFT)	9.370
WIND FORCE (LBS)	0.48
HANGER TENSION (LBS)	N/A
BLOW OFF (FT)	0.38
BLOW OFF (IN)	4.58

(ON CARBON)

(FROM START OF HORN)

(SAFETY FACTOR 11" BEFORE HORN)
(STANDARD FOR KCS)

REV	DATE	DESCRIPTION	DESIGNED BY	PFW
			CHECKED BY	BP
			DRAWN BY	PFW
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022

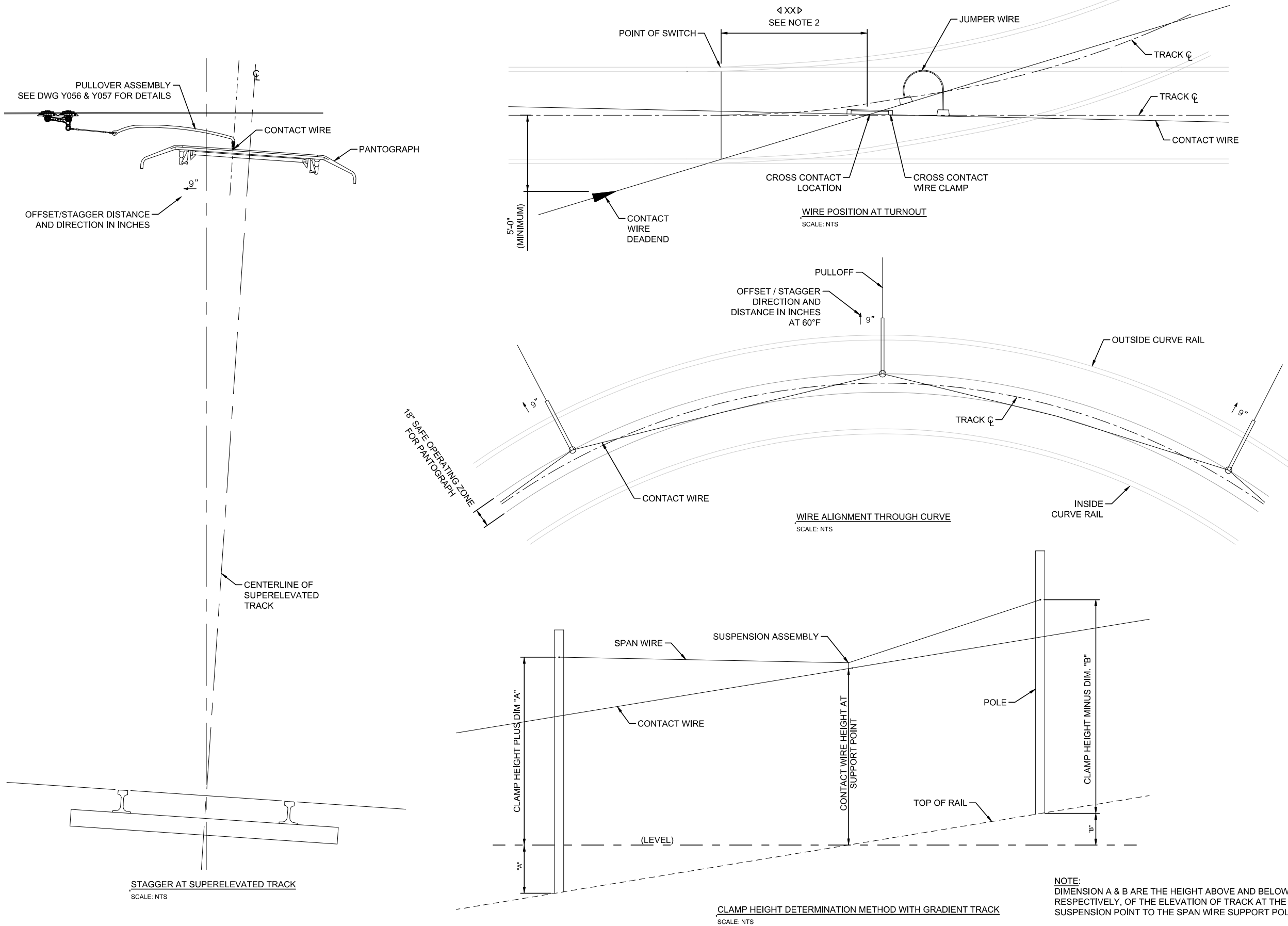


ISSUE FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270
NOT FOR CONSTRUCTION	

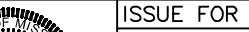
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM TECHNICAL SHEETS PANTOGRAPH SECURITY

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: Y006.dwg	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y006	SHEET NO.: 332

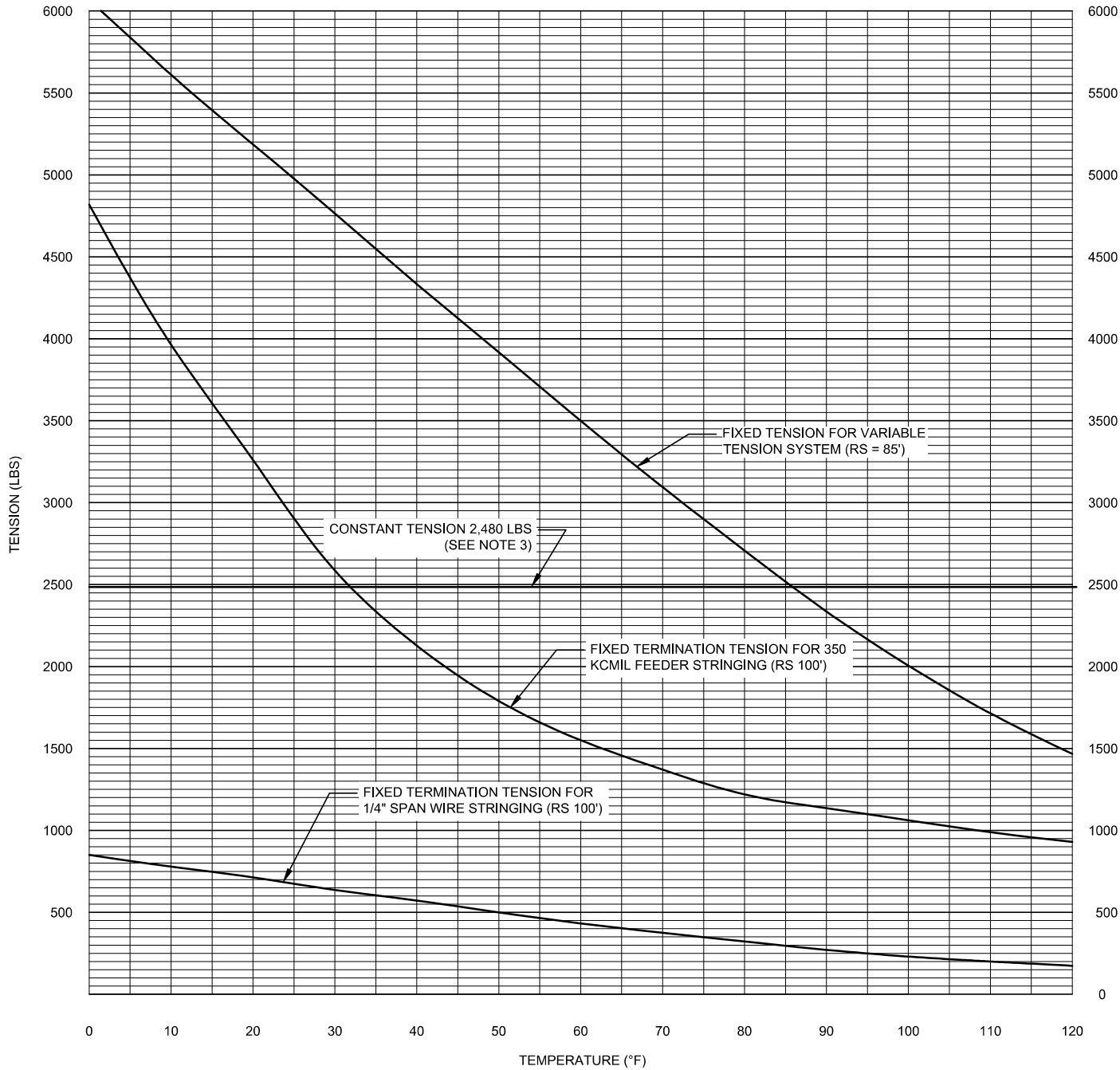


- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - CROSS CONTACT WIRE CLAMP TO BE POSITIONED AT A DISTANCE FROM THE POINT OF SWITCH AS INDICATED ON LAYOUT DRAWINGS. CONTRACTOR TO CONFIRM LOCATION OF CLAMP ALLOWS CONTACT WIRES TO RIDE ON THE SAFE ZONE OF THE PANTOGRAPH.
 - FINAL INSTALLATION AND STAGGER OF CONTACT WIRE SHALL ENSURE THAT CONTACT WIRE REMAINS WITHIN THE SAFE ZONE OF THE PANTOGRAPH AT ALL LOCATIONS DURING NORMAL OPERATING CONDITIONS.
 - JUMPERS SHALL BE POSITIONED SO THAT MOVEMENT OF CONTACT WIRES WILL NOT RESULT IN FOULING OF THE CROSS CONTACT WIRE CLAMP.
 - PULLOVER / STEADY ARM TO BE LOCATED AT REQUIRED STAGGER THAT IS REFERENCED FROM SUPERELEVATED TRACK CENTERLINE.
 - PULLOVER OFFSETS ARE SHOWN WITH ARROWS IN LAYOUT DRAWINGS AND SHOW DISTANCE AND DIRECTION OF CONTACT WIRE FROM CENTER OF TRACK TOWARDS OUTSIDE OR INSIDE OF CURVE TRACK. DIMENSIONS ARE IN INCHES.
 - FOR CROSS LEVEL TRACK, PULLOVERS AND STEADY ARMS TO BE OFFSET FROM PERPENDICULAR TRACK CENTERLINE.
 - STAGGER AND OFFSET VALUES VARY AND ARE INDICATED ON THE LAYOUT PLANS. TYPICAL OFFSET FOR PULLOVERS ON CURVES IS 9 INCHES AND FOR TANGENT STAGGERS IS 9 INCHES.
 - PULLOVER SPACING FOR CURVES IS SHOWN ON THE OCS LAYOUT DRAWINGS AND SHALL NOT EXCEED A SPACING WHERE THE CONTACT WIRE EXCEEDS THE PANTOGRAPH SAFE OPERATING ZONE OF +/- 9 INCHES.
 - CROSS CONTACT WIRE CLAMPS TO BE PLACED ON WIRE ACCORDING TO TEMPERATURE AND MOVEMENT OF MAIN LINE WIRE. REFER TO SHEET Y008 FOR POSITIONING TABLE.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM TECHNICAL SHEETS TYPICAL OFFSET AND STAGGER DETAILS		SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	BP			 HNTB Engineering, Inc. The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270				FILENAME:	CONTRACT NO.:
			DRAWN BY	PFW									Y007.dwg	CONTRACT NO. ###
			CHECKED BY	BP									VOLUME:	
			APPROVED BY	NKS									1	
PLOT DATE: 12/21/2022			1:13:37 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION				DRAWING NO.:	SHEET NO.:		
											Y007	333		

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. FIXED TENSION VALUES CORRESPOND TO CONTACT WIRES NOT SUBJECTED TO WIND OR ICE.
3. RUN CONTACT WIRE FROM DEADEND TO DEADEND POLE, PRESTRESS, TO A TENSION OF 2,855 LBS, AND THEN CONNECT CONTACT WIRES TO THEIR RESPECTIVE TERMINATION ASSEMBLIES.
4. INITIAL TENSION VALUE OF 2,480 LBS AT 60°F WAS USED IN CALCULATING CONTACT WIRE INSTALLATION TENSIONS BEFORE ATTACHMENT TO SPRINGS.
5. TENSION CHART BASED ON TENSOREX SPRING WITH WIRE MOVEMENT OF 27.0 INCHES.



TENSION INSTALLATION CHART							
TEMP °F	VARIABLE TENSION (LB)	1/4" BRACKET ARM GUY WIRE (LB)			350 KCMIL SUPPLEMENTARY FEEDER CABLE (LB)		
	RS = 85'	RS = 80'	RS = 100'	RS = 120'	RS = 80'	RS = 100'	RS = 120'
0	6058	858	852	844	5739	4814	3863
5	5841	821	815	808	5266	4380	3512
10	5624	785	780	773	4800	3965	3192
15	5408	749	744	737	4345	3573	2906
20	5192	713	708	702	3904	3210	2654
25	4977	677	673	668	3483	2881	2436
30	4762	641	637	633	3089	2591	2247
35	4549	605	602	599	2728	2339	2085
40	4336	570	568	565	2407	2124	1945
45	4125	535	534	532	2131	1942	1825
50	3915	500	500	500	1899	1789	1721
55	3706	466	467	468	1707	1660	1630
60	3500	432	435	438	1550	1550	1550
65	3296	399	404	409	1421	1456	1479
70	3095	367	374	380	1314	1375	1417
75	2898	336	345	354	1225	1305	1360
80	2706	307	318	329	1149	1243	1310
85	2519	279	293	306	1085	1189	1264
90	2339	254	270	285	1029	1140	1222
95	2167	231	249	266	980	1096	1184
100	2004	211	230	249	937	1057	1149
105	1851	193	214	233	899	1022	1117
110	1710	177	199	219	865	989	1087
115	1582	164	186	207	834	960	1060
120	1466	152	175	196	807	932	1034

INSTALLATION TENSION CHART
120' RULING SPAN (350 KCMIL HARD DRAWN COPPER CONTACT WIRE)

REV	DATE	DESCRIPTION

DESIGNED BY
PFW

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BP

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PFW

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BP

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NKS

12/21/2022

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DATE12/23/2022

ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
TECHNICAL SHEETS
INSTALLATION TENSION CHART

SCALE FOR 22"x34":
NO SCALE

FILENAME:
Y008.dwg

CONTRACT NO.:
CONTRACT NO. ###

VOLUME:
1

DRAWING NO.:
Y008

SHEET NO.:
334

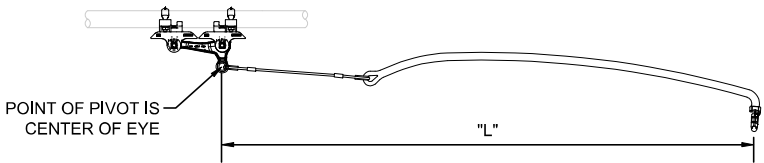
303166

TOTAL ALONG TRACK MOVEMENT - "ATM" (IN)																	
TEMP (°F)	DISTANCE FROM MID-POINT/FIXED TERMINATION (FT)/MOVEMENT IN INCHES																
	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800
-20	-1.58	-2.37	-3.16	-3.95	-4.74	-5.53	-6.32	-7.11	-7.90	-8.69	-9.48	-10.26	-11.05	-11.84	-12.63	-	-
-10	-1.35	-2.03	-2.71	-3.38	-4.06	-4.74	-5.41	-6.09	-6.77	-7.44	-8.12	-8.80	-9.48	-10.15	-10.83	-11.51	-12.18
0	-1.13	-1.69	-2.26	-2.82	-3.38	-3.95	-4.51	-5.08	-5.64	-6.20	-6.77	-7.33	-7.90	-8.46	-9.02	-9.59	-10.15
10	-0.90	-1.35	-1.80	-2.26	-2.71	-3.16	-3.61	-4.06	-4.51	-4.96	-5.41	-5.87	-6.32	-6.77	-7.22	-7.67	-8.12
20	-0.68	-1.02	-1.35	-1.69	-2.03	-2.37	-2.71	-3.05	-3.38	-3.72	-4.06	-4.40	-4.74	-5.08	-5.41	-5.75	-6.09
30	-0.45	-0.68	-0.90	-1.13	-1.35	-1.58	-1.80	-2.03	-2.26	-2.48	-2.71	-2.93	-3.16	-3.38	-3.61	-3.84	-4.06
40	-0.23	-0.34	-0.45	-0.56	-0.68	-0.79	-0.90	-1.02	-1.13	-1.24	-1.35	-1.47	-1.58	-1.69	-1.80	-1.92	-2.03
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.23	0.34	0.45	0.56	0.68	0.79	0.90	1.02	1.13	1.24	1.35	1.47	1.58	1.69	1.80	1.92	2.03
70	0.45	0.68	0.90	1.13	1.35	1.58	1.80	2.03	2.26	2.48	2.71	2.93	3.16	3.38	3.61	3.84	4.06
80	0.68	1.02	1.35	1.69	2.03	2.37	2.71	3.05	3.38	3.72	4.06	4.40	4.74	5.08	5.41	5.75	6.09
90	0.90	1.35	1.80	2.26	2.71	3.16	3.61	4.06	4.51	4.96	5.41	5.87	6.32	6.77	7.22	7.67	8.12
100	1.13	1.69	2.26	2.82	3.38	3.95	4.51	5.08	5.64	6.20	6.77	7.33	7.90	8.46	9.02	9.59	10.15
110	1.35	2.03	2.71	3.38	4.06	4.74	5.41	6.09	6.77	7.44	8.12	8.80	9.48	10.15	10.83	11.51	12.18
120	1.58	2.37	3.16	3.95	4.74	5.53	6.32	7.11	7.90	8.69	9.48	10.26	11.05	11.84	12.63	-	-

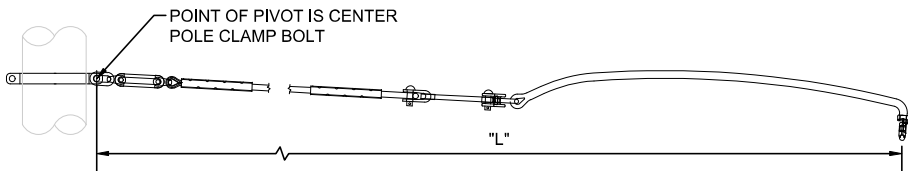
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- NEUTRAL POSITION IS AT 50°F.
- STAGGER CHANGE "X" IS LIMITED BY PANTOGRAPH SECURITY.
- STAGGER CHANGE "X" IS FOR BRACKET ARM SUPPORT.
- ALONG TRACK MOVEMENT IS FOR SINGLE CONTACT WIRE.
- FOR PULLOVER ASSEMBLY DETAILS, SEE DRAWINGS Y056 AND Y057.

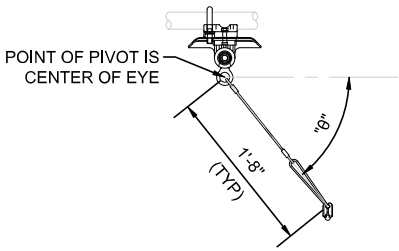
STAGGER CHANGE - "X" (IN)																								
ATM (IN)	LENGTH OF "PO" ASSEMBLIES - "L" (FT)				LENGTH OF "FPO" ASSEMBLIES - "L" (FT)						ANGLE OF "TYPE P" ASSEMBLIES - "Ø" (°)													
	2.0	4.0	4.5	5.0	10.0	12.0	14.0	16.0	18.0	20.0	25	30	35	40	45	50	55	60	65	70	75	80	85	
1	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	
2	0.08	0.04	0.04	0.03	0.02	0.01	0.01	0.01	0.01	0.01	0.08	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.03	0.02	0.02	0.01	
3	0.19	0.09	0.08	0.08	0.04	0.03	0.03	0.02	0.02	0.02	0.19	0.18	0.17	0.16	0.15	0.13	0.12	0.10	0.09	0.07	0.05	0.04	0.02	
4	0.34	0.17	0.15	0.13	0.07	0.06	0.05	0.04	0.04	0.03	0.33	0.32	0.30	0.28	0.26	0.24	0.21	0.18	0.15	0.13	0.09	0.06	0.03	
5	0.53	0.26	0.23	0.21	0.10	0.09	0.07	0.07	0.06	0.05	0.52	0.50	0.47	0.44	0.41	0.37	0.33	0.29	0.24	0.20	0.15	0.10	0.05	
6	0.76	0.38	0.33	0.30	0.15	0.13	0.11	0.09	0.08	0.08	0.76	0.72	0.68	0.64	0.59	0.54	0.48	0.42	0.35	0.29	0.22	0.14	0.07	
7	1.04	0.51	0.46	0.41	0.20	0.17	0.15	0.13	0.11	0.10	1.04	0.99	0.94	0.88	0.81	0.73	0.66	0.57	0.48	0.39	0.30	0.20	0.10	
8	1.37	0.67	0.60	0.54	0.27	0.22	0.19	0.17	0.15	0.13	1.36	1.30	1.23	1.15	1.06	0.97	0.86	0.75	0.64	0.52	0.39	0.26	0.13	
9	1.75	0.85	0.76	0.68	0.34	0.28	0.24	0.21	0.19	0.17	1.74	1.67	1.58	1.47	1.36	1.24	1.10	0.96	0.81	0.66	0.50	0.33	0.17	
10	2.18	1.05	0.93	0.84	0.42	0.35	0.30	0.26	0.23	0.21	2.18	2.08	1.97	1.84	1.70	1.55	1.38	1.20	1.02	0.82	0.62	0.42	0.21	
11	2.67	1.28	1.13	1.02	0.51	0.42	0.36	0.32	0.28	0.25	2.67	2.55	2.41	2.26	2.08	1.89	1.69	1.47	1.25	1.01	0.76	0.51	0.26	
12	3.22	1.52	1.35	1.21	0.60	0.50	0.43	0.38	0.33	0.30	3.23	3.08	2.92	2.73	2.52	2.29	2.04	1.78	1.50	1.22	0.92	0.62	0.31	



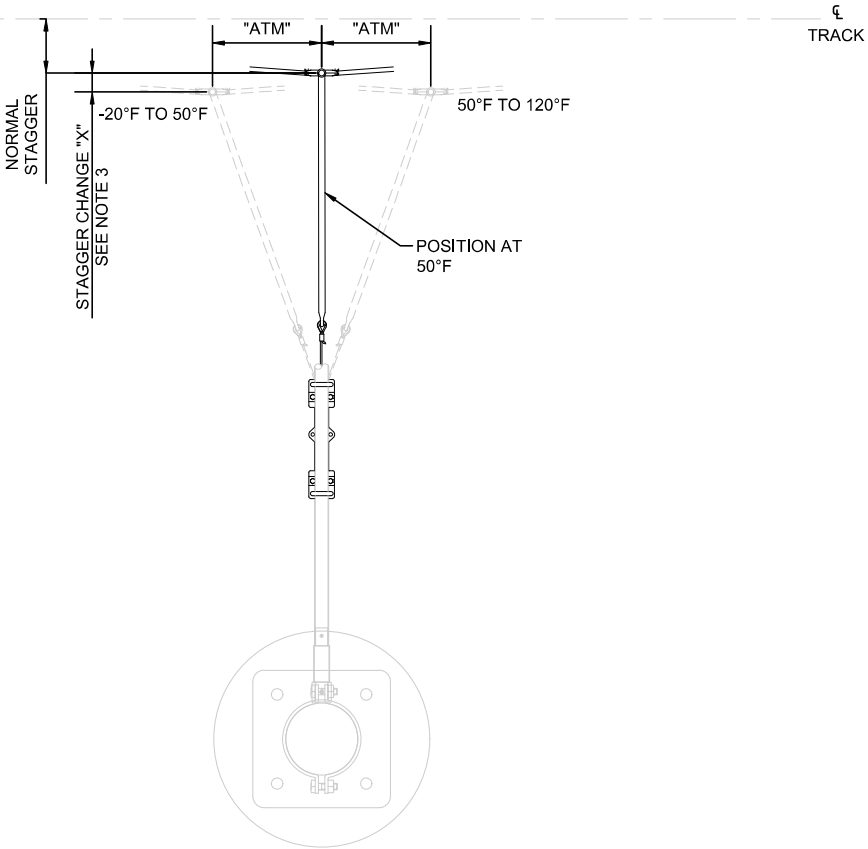
1 "PO" ASSEMBLIES
SCALE: NTS



2 "FPO" ASSEMBLIES
SCALE: NTS



3 "TYPE P" ASSEMBLIES
SCALE: NTS



CW REGISTRATION MOVEMENT & STAGGER CHANGE
SCALE: NTS

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM TECHNICAL SHEETS ALONG TRACK MOVEMENT CHART	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Y009.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: Y009	SHEET NO.: 335
			CHECKED BY	BP									
			DRAWN BY	PFW									
			CHECKED BY	BP									
			APPROVED BY	NKS									
PLOT DATE: 12/21/2022			1:15:37 PM										

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. TABLES PROVIDE LOADINGS FOR VARIOUS SPAN LENGTHS AND ARE PRESENTED FOR REFERENCE. TENSION AND BLOW OFF PROVIDED ARE BASED ON A RULING SPAN OF 100 FEET.
3. PER NESC CODE, RULE 251 B, A CONSTANT COMPONENT OF 0.3 LB/FT SHALL BE ADDED TO THE RESULTANT LOAD BETWEEN THE VERTICAL LOAD AND WIND LOAD.
4. BLOWOFF IS CONSIDERED AT MID-SPAN.

VERTICAL AND WIND LOADS													
SPAN "L" (FT)	VERTICAL LOAD (LB)		WIND LOAD (LB)										
			PARAMETER	OC - 1	OC - 2	OC - 3	OC - 4	OC - 5	OC - 6	NOC - 1	NOC - 2	NOC - 3	NOC - 4
	1.063	1.759	WIND SPEED (MPH)	0	0	40	0	40	40	40	55	90	90
	W/O ICE	W/ 1/2" ICE	RADIAL ICE (IN)	0	0	0	0	0.5	0	0.5	0.5	0	0
30	32	53		0	0	6	0	16	6	16	29	30	30
35	37	62		0	0	7	0	19	7	19	34	35	35
40	43	70		0	0	8	0	22	8	22	39	40	40
45	48	79		0	0	9	0	24	9	24	44	45	45
50	53	88		0	0	10	0	27	10	27	49	50	50
55	58	97		0	0	11	0	30	11	30	53	55	55
60	64	106		0	0	12	0	32	12	32	58	60	60
65	69	114		0	0	13	0	35	13	35	63	65	65
70	74	123		0	0	14	0	38	14	38	68	70	70
75	80	132		0	0	16	0	41	16	41	73	75	75
80	85	141		0	0	17	0	43	17	43	78	80	80
85	90	150		0	0	18	0	46	18	46	83	85	85
90	96	158		0	0	19	0	49	19	49	87	90	90
95	101	167		0	0	20	0	51	20	51	92	95	95
100	106	176		0	0	21	0	54	21	54	97	100	100
105	112	185		0	0	22	0	57	22	57	102	105	105
110	117	193		0	0	23	0	59	23	59	107	110	110
115	122	202		0	0	24	0	62	24	62	112	115	115
120	128	211		0	0	25	0	65	25	65	117	120	120

WIND AND VERTICAL LOADING

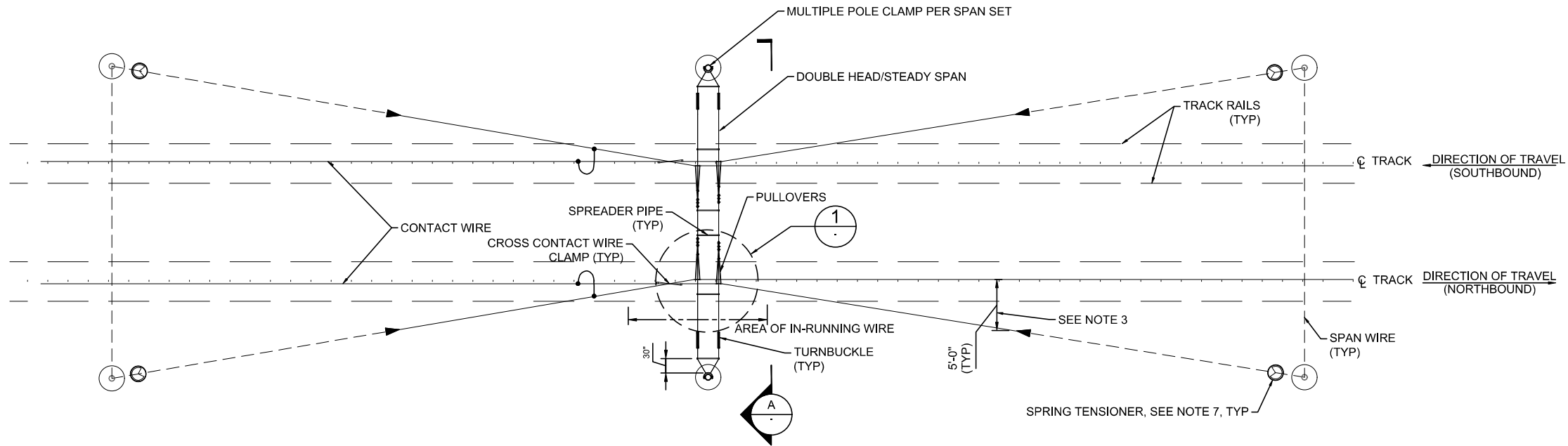
LOADING CONDITIONS						
OPERATING CONDITIONS	TEMP (DEG)	WIND (MPH)	RADIAL ICE (IN)	TENSION CW (LB)	BLOW-OFF (IN)	BASIS
OC - 1	50	0	0	2480	0	NORMAL
OC - 2	120	0	0	2480	0	CONDUCTOR SAG
OC - 3	120	40	0	2480	1.30	BLOW-OFF
OC - 4	32	0	0	2480	0	PRE-ICE
OC - 5	32	40	0.5	2480	3.34	ICE
OC - 6	-20	40	0	2480	1.30	LOW TEMPERATURE
NON OPERATING CONDITIONS						
NOC - 1	-20	40	0.5	2760	N/A	NESC
NOC - 2	-20	55	0.5	2860	N/A	STRUCTURAL/CW FOS
NOC - 3	0	90	0	2480	N/A	LOW TEMP HIGH WIND
NOC - 4	100	90	0	2480	N/A	CONDUCTOR CLEARANCE

LOADING CONDITIONS-OPERATING AND NON-OPERATING

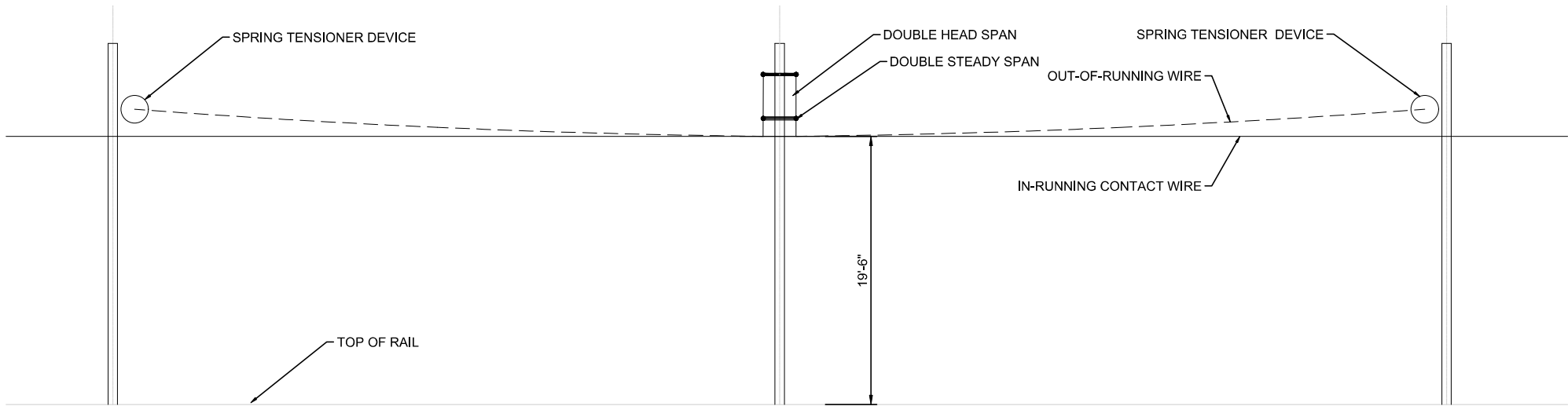
RADIAL LOADS BY ANGLE		
ANGLE "A" DEGREES	OPERATING	NON-OPERATING
	TENSION (NORMAL)	TENSION (MAXIMUM)
	CW	CW
	2480	2860
1	43	50
2	87	100
3	130	150
4	173	200
5	216	250
6	260	299
7	303	349
8	346	399
9	389	449
10	432	499
11	475	548
12	518	598
13	561	648
14	604	697
15	647	747
16	690	796

RADIAL LOAD DUE TO CONTACT WIRE ANGLE

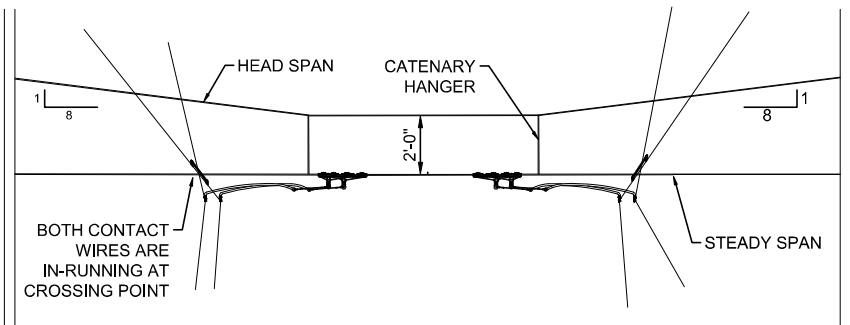
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	BP			 HDR Engineering, Inc.	 The HNTB COMPANIES		NO SCALE
			DRAWN BY	PFW			10450 Holmes Road	INFRASTRUCTURE SOLUTIONS		FILENAME:
							Suite 600	300 Apollo Drive		Y010.dwg
			CHECKED BY	BP			Kansas City, MO 64131-3471	Chelmsford, MA 01824		CONTRACT NO.:
			APPROVED BY	NKS			816-360-2700	Phone: 978-905-4000		CONTRACT NO. ###
PLOT DATE: 12/21/2022			1:17:05 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:
									Y010	336



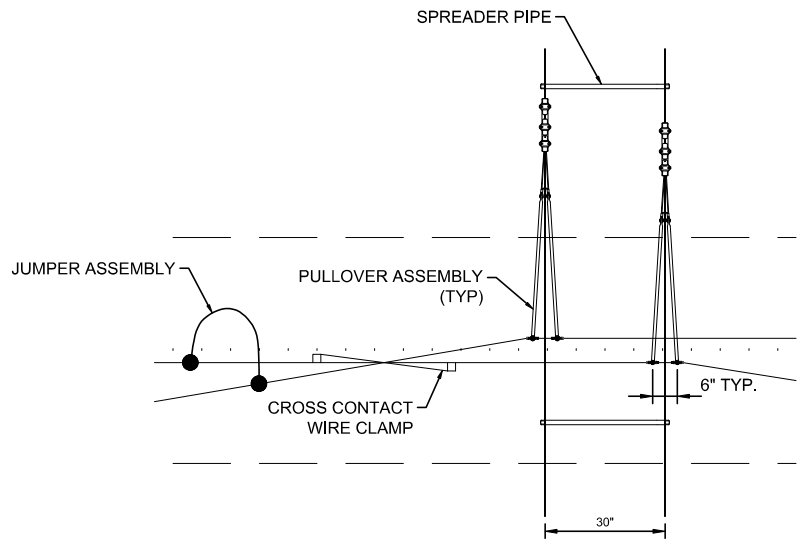
SINGLE CONTACT WIRE - TYPICAL OVERLAP PLAN, OLP-1
SCALE: NTS



SINGLE CONTACT WIRE - TYPICAL OVERLAP ELEVATION
SCALE: NTS



A SECTION
SCALE: NO SCALE

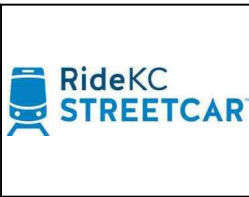


1 DETAIL - CROSS-CONTACT WIRE CLAMP
SCALE: NTS

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. OVERLAP SHOWN IS FOR TYPICAL ARRANGEMENT FOR SINGLE CONTACT WIRE SYSTEM AND MAY VARY. SPAN LENGTHS, HANGER SPACING, AND WIRE ELEVATIONS MAY VARY ACCORDING TO LOCATION.
3. IN-SPAN INSULATORS AND TERMINATION DEVICES TO BE A MINIMUM OF 5'-0" FROM CENTER LINE OF TRACK. THIS DIMENSION SHALL BE INCREASED ALONG SEGMENTS OF SUPER ELEVATED TRACK IN ORDER TO MAINTAIN PANTOGRAPH CLEARANCE.
4. POLE AND HANGER SPACING VARY ACCORDING TO OVERLAP LOCATION. REFER TO OCS LAYOUT DRAWINGS AND / OR OCS PROFILE DRAWINGS FOR ADDITIONAL INFORMATION.
5. IF NOT OTHERWISE NOTED ON LAYOUT PLAN, USE A RISE OF 1:100 TO DETERMINE POLE CLAMP HEIGHT FOR PULLOVERS.
6. STEADY SPAN TO BE TENSIONED TO 1,000 LBS AND HAVE TURNBUCKLES AT EACH POLE AS SHOWN ON DRAWING Y052.
7. OMIT SPRING TENSIONER WHERE A FIXED CONTACT WIRE DEAD END IS SHOWN ON LAYOUT.
8. FOR OVERLAP BRACKET ARM DETAILS, SEE DRAWING Y046.

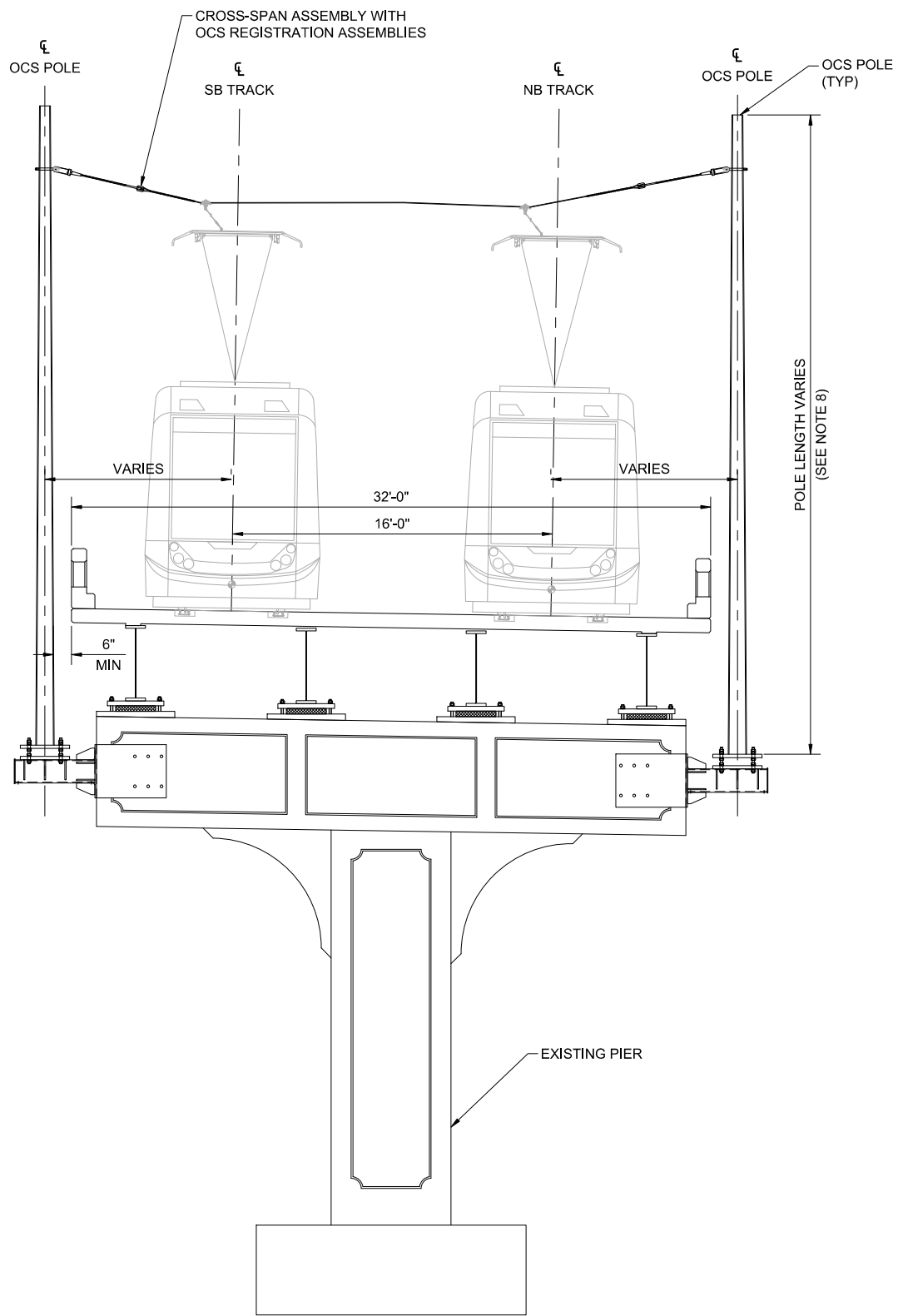
REV	DATE	DESCRIPTION	DESIGNED BY	PFW
			CHECKED BY	BP
			DRAWN BY	PFW
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022



ISSUE FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
OVERHEAD CONTACT SYSTEM TYPICAL ARRANGEMENTS TYPICAL OVERLAP ARRANGEMENT	

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: Y011.dwg	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y011	SHEET NO.: 337



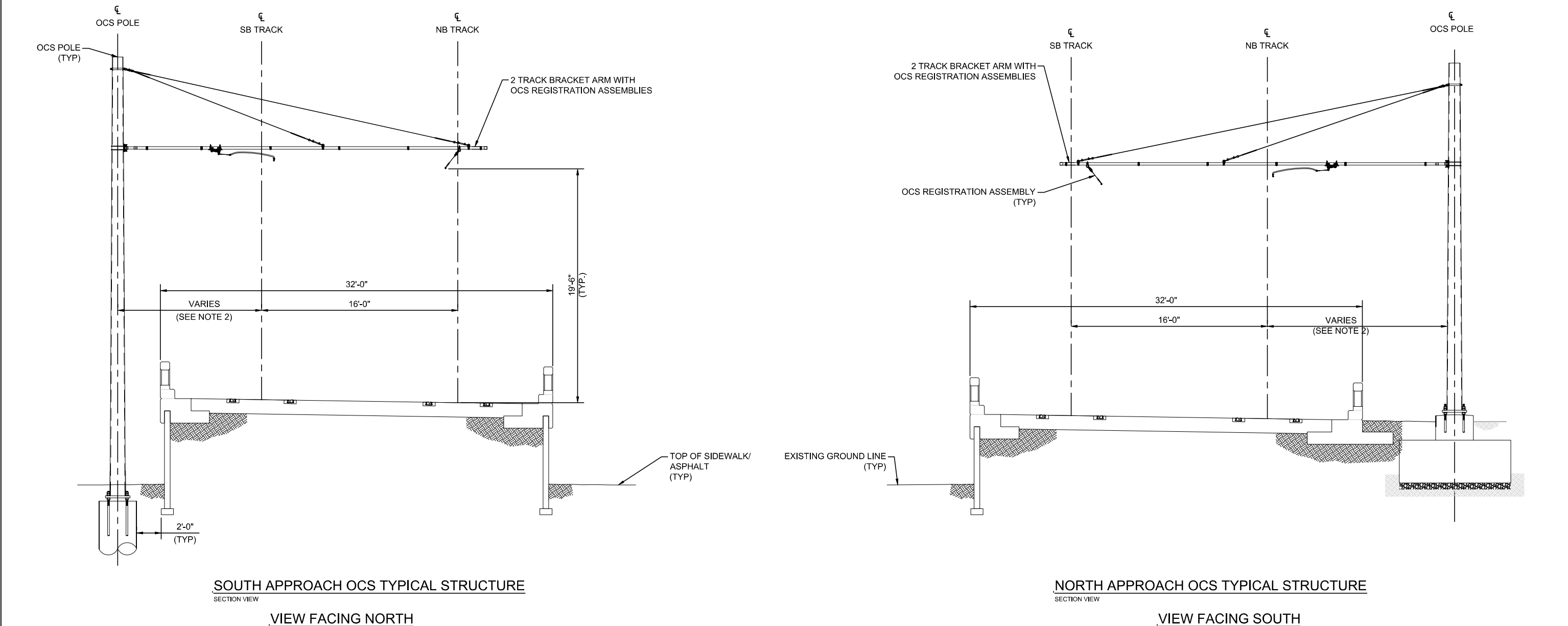
VIADUCT OCS TYPICAL STRUCTURE
SECTION VIEW

NOTES:

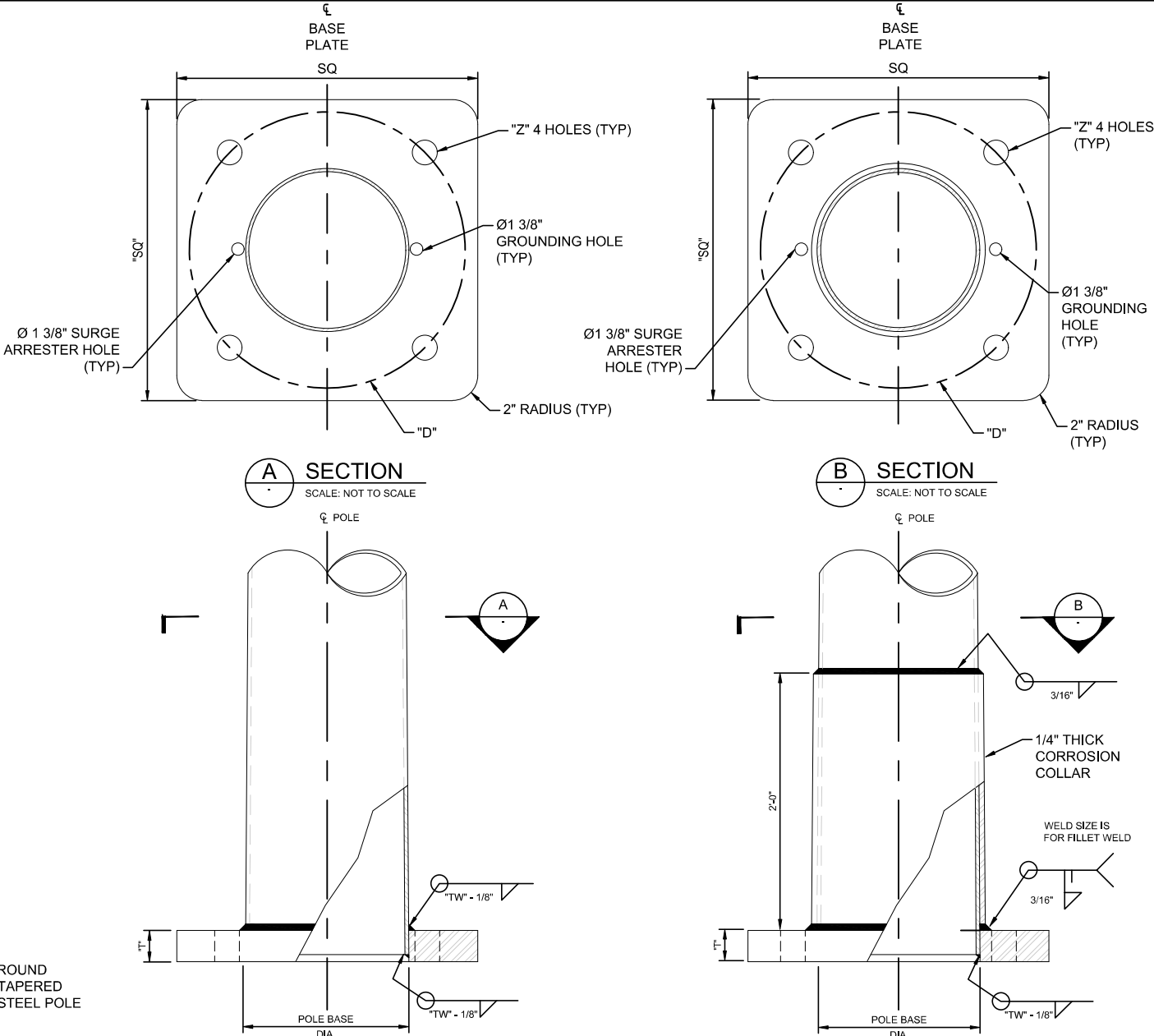
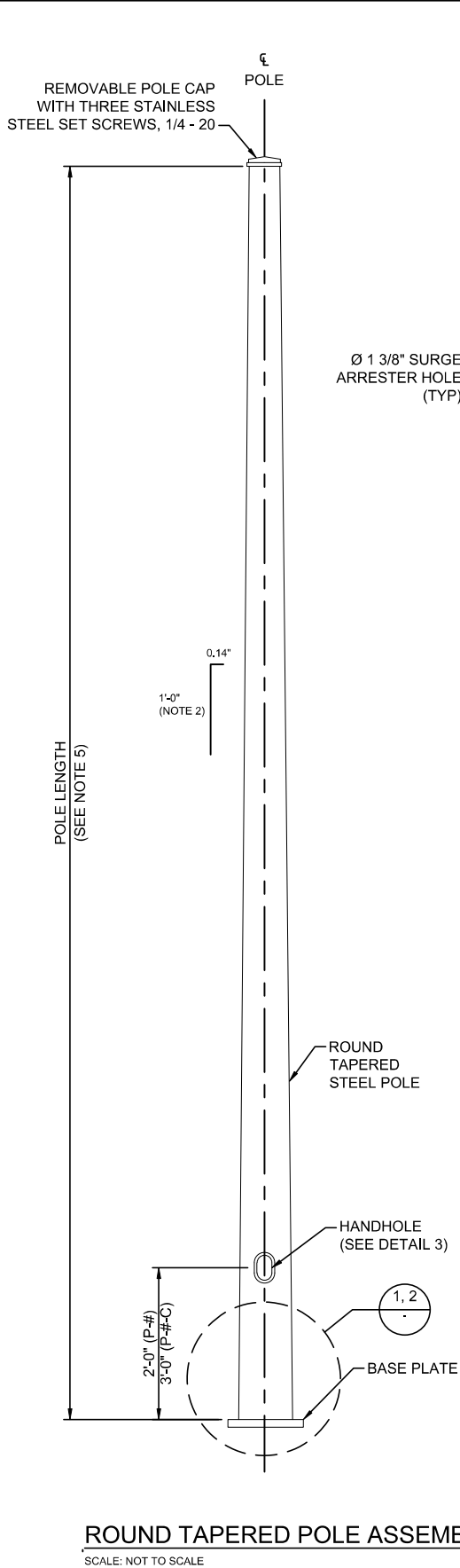
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- FOR PIER CAP ATTACHMENT DETAILS REFER TO DWG Y038.
- PIER CAP WIDTH OF 4'-6" AND REINFORCEMENT SPACING, "A", ARE BASED ON AS-BUILT DRAWINGS, GRAND BOULEVARD VIADUCT REPLACEMENT, LATEST REVISION DATES 06/09/2000. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION OF THE PIER CAP ATTACHMENT ASSEMBLIES.
- ANCHOR BOLTS SHALL BE ANCHORED INTO EXISTING PIER USING CEMENTITIOUS GROUT IN CORED HOLES, GROUT SHALL BE 5000 PSI.
- WHERE DRAIN PIPES INTERFERE WITH PLACEMENT OF OCS POLE BRACKETS, CONTRACTOR TO MOVE, ADJUST, OR CHANGE SUPPORTS OF DRAINS TO ALLOW BRACKET PLACEMENT.
- WHERE ELECTRICAL CONDUITS AND JUNCTION BOXES INTERFERE WITH PLACEMENT OF OCS POLE BRACKETS, CONTRACTOR TO MOVE, ADJUST, OR CHANGE LOCATION OF CONDUITS AND BOXES TO ALLOW OCS POLE BRACKET PLACEMENT.
- WHERE CHANGES TO DRAINS AND ELECTRICAL EQUIPMENT IS REQUIRED, CONTRACTOR SHALL PROPOSE NEW ARRANGEMENT TO THE ENGINEER FOR APPROVAL.
- FOR POLE HEIGHTS REFER TO POLE & FOUNDATION SCHEDULE ON DRAWINGS Y111 AND Y112.

REV	DATE	DESCRIPTION	DESIGNED BY	GK			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE		
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			DRAWN BY	GK								CONTRACT NO.:		
			CHECKED BY	BP								CONTRACT NO. ###		
			APPROVED BY	NKS								VOLUME: 1		
PLOT DATE: 12/21/2022			1:19:42 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION		OVERHEAD CONTACT SYSTEM TYPICAL ARRANGEMENTS AT GRAND BOULEVARD VIADUCT		DRAWING NO.:	Y012	SHEET NO.:	338

- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - FOR POLE TYPE, LENGTH, AND OFFSET AT SPECIFIC LOCATIONS REFER TO POLE AND FOUNDATION SCHEDULE DRAWINGS Y111 TO Y112.



REV	DATE	DESCRIPTION	DESIGNED BY	GK			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	BP			 HDR Engineering, Inc.	 The HNTB COMPANIES		FILENAME: Y013.dwg
			DRAWN BY	GK			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270		CONTRACT NO.: CONTRACT NO. ###
			CHECKED BY	BP						VOLUME: 1
			APPROVED BY	NKS						DRAWING NO.: Y013
PLOT DATE: 12/22/2022			7:50:48 AM			DATE: 12/23/2022	NOT FOR CONSTRUCTION			



1 BASE PLATE FOR STANDARD POLE - P-#

SCALE: NOT TO SCALE

2 BASE PLATE - POLE WITH CORROSION COLLAR - P-#-C

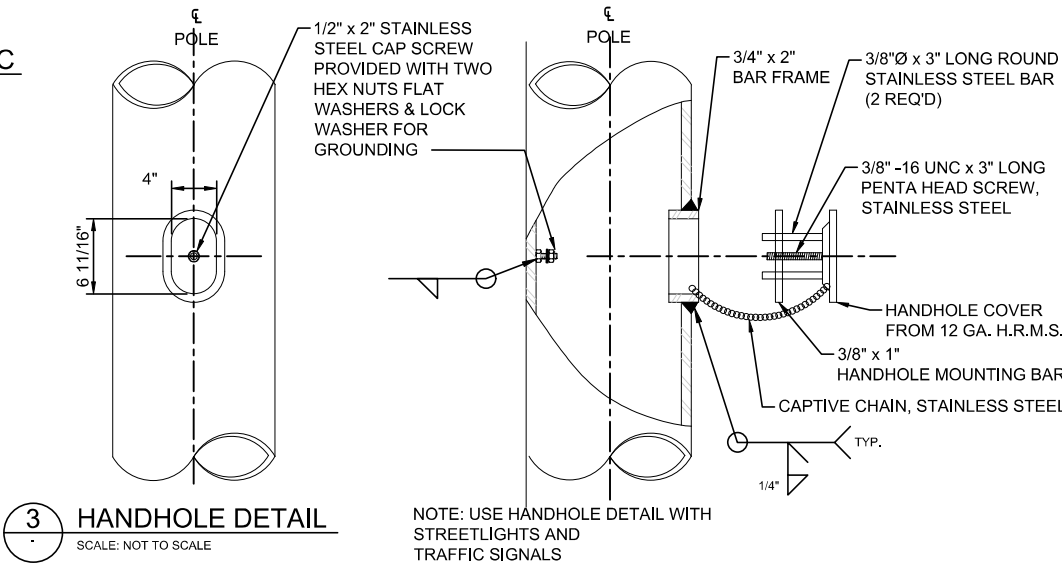
SCALE: NOT TO SCALE

POLE TYPE	POLE BASE OUTSIDE DIAMETER (IN)	WALL THICKNESS "TW" (IN)	POLE BASE				ANCHOR BOLT DIA. ("A") (IN)	ALLOWABLE BENDING MOMENT (FT-LBS)
			SQUARE "SQ" (IN)	BOLT CIRCLE "D" (IN)	THICKNESS "T" (IN)	ANCHOR BOLT HOLE "Z" (IN)		
P-1 / P-1-C	11	0.3750	20	17	2	1 13/16	1 1/2	71,250
P-1B	11	0.3750	29 1/2	27	2	1 13/16	1 1/2	71,250
P-2 / P-2-C	10	0.5000	19	16	2	2 5/16	2	90,000
P-2B	10	0.5000	29 1/2	27	2	2 5/16	2	90,000
P-3 / P-3-C	11	0.5000	20	17	2	2 5/16	2	112,500
P-3B	11	0.5000	29 1/2	27	2	2 5/16	2	112,500
P-4 / P-4-C	13	0.6250	23	20	2	2 13/16	2 1/2	195,000
P-4B	13	0.6250	29 1/2	27	2	2 13/16	2 1/2	195,000
P-5 / P-5-C	16	0.6250	26	23	2 1/2	2 13/16	2 1/2	303,750
P-5B	16	0.6250	29 1/2	27	2 1/2	2 13/16	2 1/2	303,750

* POLE BASE DIAMETER IS MEASURED AT BASE PLATE MINUS THICKNESS OF CORROSION COLLAR.

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- THE FABRICATION OF POLE ASSEMBLY SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF THE STRUCTURAL STEEL OF BUILDINGS AND IEEE STANDARD 1630, LATEST EDITION. POLES MAY BE OF MULTIPLE PLYS TO OBTAIN WALL THICKNESS.
- POLE SHALL HAVE A UNIFORM TAPER OF FOURTEEN HUNDREDTHS (0.14) OF AN INCH PER LINEAR FOOT. THE 0.14" : 1' SLOPE IS THE REDUCTION RATE IN DIAMETER.
- WELDING SHALL BE IN CONFORMANCE WITH THE AWS D1.1 SPECIFICATIONS OF LATEST EDITION. SIZE OF WELD FOR BASE PLATE AND HANDHOLES DETERMINED BY MANUFACTURER.
- FOR POLE LENGTH AND TYPE, REFER TO POLE SCHEDULE DRAWINGS Y111 AND Y112.
- FOR POLE TAG DETAILS, REFER TO DRAWING Y081.
- SURGE ARRESTER HOLE IS ONLY NECESSARY FOR POLES WITH SURGE ARRESTER ATTACHED AS SHOWN IN DRAWING Y067.
- POLE FABRICATOR SHALL PROVIDE SHOP DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MISSOURI.
- IF POLE IS MADE OF FORMED PLATE AND WELDED, WELD SHALL BE FLUSH WITH OUTER SURFACE OF POLE.
- EACH POLE SHALL BE PROVIDED WITH A POLE CAP.
- GROUNDING AND ARRESTER HOLES TO CLEAR WELD AND ACCOMMODATE INSERTION OF A 3/4" IPS FRE CONDUIT FOR GROUNDING WIRE.
- THE POLE MANUFACTURER SHALL PROVIDE A PLATE TAG TO EACH POLE. THE PLATE TAG SHALL BE ENGRAVED OR CAST WITH THE FOLLOWING INFORMATION: MANUFACTURER'S NAME, POLE SIZE, DATE MANUFACTURED, SECTION MODULUS OF BUTT SECTION (INCHES CUBED), AND STRENGTH OF STEEL (PSI). PLATE TAG SHALL BE 1/4" THICK, GRADE 304 STAINLESS STEEL WELDED TO POLE BUTT ALL AROUND EDGES TO PLATE TAG WITH STAINLESS STEEL WELDING ROD. LETTERING SHALL BE OF SUFFICIENT DEPTH IF ENGRAVED OR SUFFICIENT HEIGHT IF CAST THAT THE FINISH OF THE POLE SHALL NOT OBSCURE THE LETTERING. SEE DRAWING Y081 FOR POLE PLATE INFORMATION DETAIL.
- HANDHOLE SHOWN ON DETAIL 3 TO BE 24" ABOVE SIDEWALK FOR EMBEDDED BASE PLATES.
- ALL DIMENSIONS FOR POLES AND ANCHOR BOLTS AND POLE DESIGNATION TABLE TO BE VERIFIED BY THE POLE MANUFACTURER AND CALCULATIONS CHECKED BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MISSOURI. ULTIMATE DESIGN OF THE POLE SHALL BE BY THE POLE MANUFACTURER.
- SEE DRAWINGS Y031 - Y036 FOR POLE FOUNDATIONS.
- POLES SHALL BE HOT DIPPED GALVANIZED PER ASTM A123. POLES REQUIRE PAINTING SHALL BE PAINTED AS STATED IN THE SPECIFICATIONS. COLORS SHALL CONFORM TO CITY OF KANSAS STANDARDS. PAINTED POLES SHALL NOT BE GALVANIZED. POLE CLAMPS AND OTHER ATTACHMENTS TO PAINTED POLES SHALL BE PAINTED WITH THE SAME COLOR AS THE POLE.
- IF POLE EXTENSIONS ARE NEEDED, LENGTH SHALL BE DETERMINED BY THE CONTRACTOR TO MEET THE HEIGHT ABOVE THE OVERALL REQUIRED POLE LENGTH PROVIDED IN THE CONTRACT PLAN POLE SCHEDULE (DRAWINGS Y111 AND Y112). THIS WILL BE FOR ALL POLES REQUIRING AN EXTENSION WHETHER STREET LIGHT, FEEDER POLE TYPE, OR OCS TYPE. THE POLE EXTENSION SHALL BE OF THE SAME MATERIAL, STRENGTH, AND FINISH AS THE OCS POLE TO WHICH IT WILL BE PLACED OVER. THICKNESS OF THE EXTENSION WALL SHALL BE THE SAME AS THE POLE. MANUFACTURER SHALL SUBMIT EXTENSION CONNECTION DETAILS FOR ENGINEER REVIEW. CONNECTION SHALL BE FLUSH WITH BASE POLE.
- POLE EXTENSIONS SHALL NOT BE USED TO MEET THE REQUIRED POLE LENGTH STATED IN THE POLE SCHEDULE BUT FOR SITUATIONS WHERE UNFORESEEN EXTENSIONS ARE REQUIRED.
- FOR BASE PLATE DETAIL FOR POLES ON BRIDGE, POLE TYPES P-#B, REFER TO DRAWING Y038.



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			CHECKED BY	BP
			DRAWN BY	PFW
			CHECKED BY	BP
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PLOT DATE: 12/22/2022			7:45:35 AM	DATE 12/23/2022

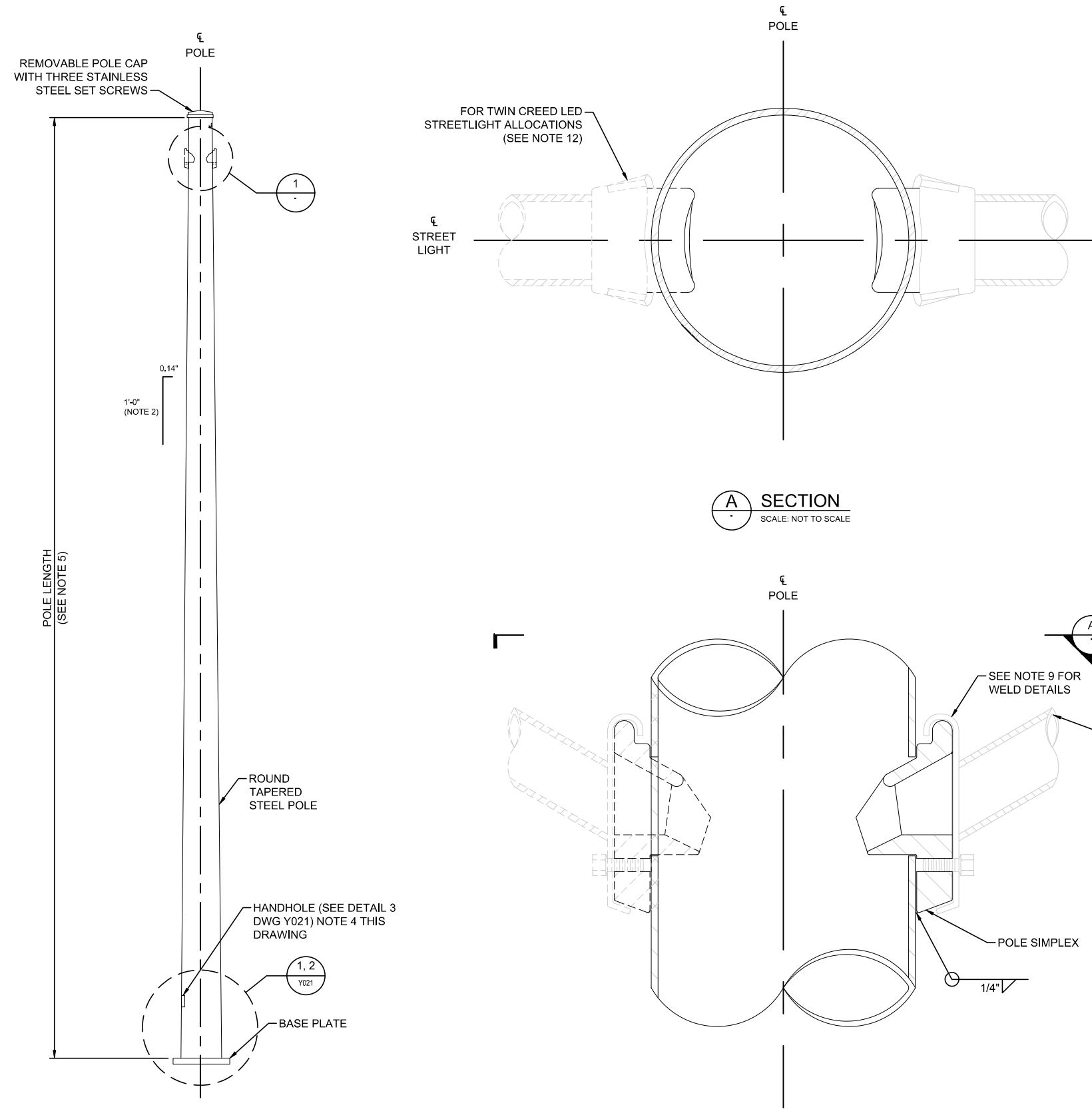


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KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
STRUCTURAL DETAILS
TYPICAL POLE DETAIL

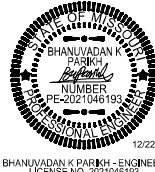
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CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y021	SHEET NO.: 340

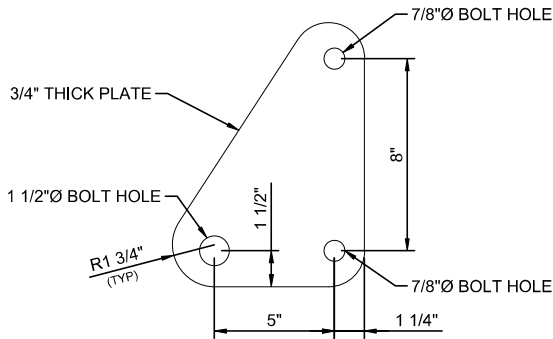


- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - THE FABRICATION OF POLE ASSEMBLY SHALL BE IN CONFORMANCE WITH THE REQUIREMENTS OF THE AISC SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF THE STRUCTURAL STEEL OF BUILDINGS AND IEEE STANDARD 1630, LATEST EDITION.
 - POLE SHALL HAVE A UNIFORM TAPER OF FOURTEEN HUNDREDTHS (0.14) OF AN INCH PER LINEAR FOOT. THE 0.14" : 1' SLOPE IS THE REDUCTION RATE IN DIAMETER.
 - WELDING SHALL BE IN CONFORMANCE WITH THE AWS D1.1 SPECIFICATIONS OF LATEST EDITION. SIZE OF WELD FOR BASE PLATE AND HAND HOLES DETERMINED BY MANUFACTURER.
 - IF POLE FOUNDATION IS ABOVE GRADE, HAND HOLE TO BE 2'-0" ABOVE BASE PLATE. IF POLE IS EMBEDDED, HAND HOLE TO BE 3'-0" ABOVE BASE PLATE BUT SHALL CLEAR CORROSION COLLAR.
 - FOR POLE LENGTH AND TYPE, REFER TO POLE SCHEDULE DRAWINGS Y111 AND Y112.
 - FOR POLE TAG DETAILS, REFER TO DRAWING Y081.
 - SURGE ARRESTER HOLE IS ONLY NECESSARY FOR POLES WITH SURGE ARRESTOR ATTACHED AS SHOWN IN DRAWING Y067.
 - POLE FABRICATOR SHALL PROVIDE SHOP DRAWINGS SIGNED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MISSOURI.
 - WELD DESIGN TO BE PROVIDED BY POLE MANUFACTURER PER CITY STANDARDS.
 - POLE EXTENSIONS SHALL NOT BE USED TO MEET THE REQUIRED POLE LENGTH STATED IN THE POLE SCHEDULE BUT FOR SITUATIONS WHERE UNFORESEEN EXTENSIONS ARE REQUIRED.
 - REFER TO LIGHTING PLANS FOR LIGHT FIXTURE DETAILS AND LIGHT FIXTURE ALLOCATION TYPE.

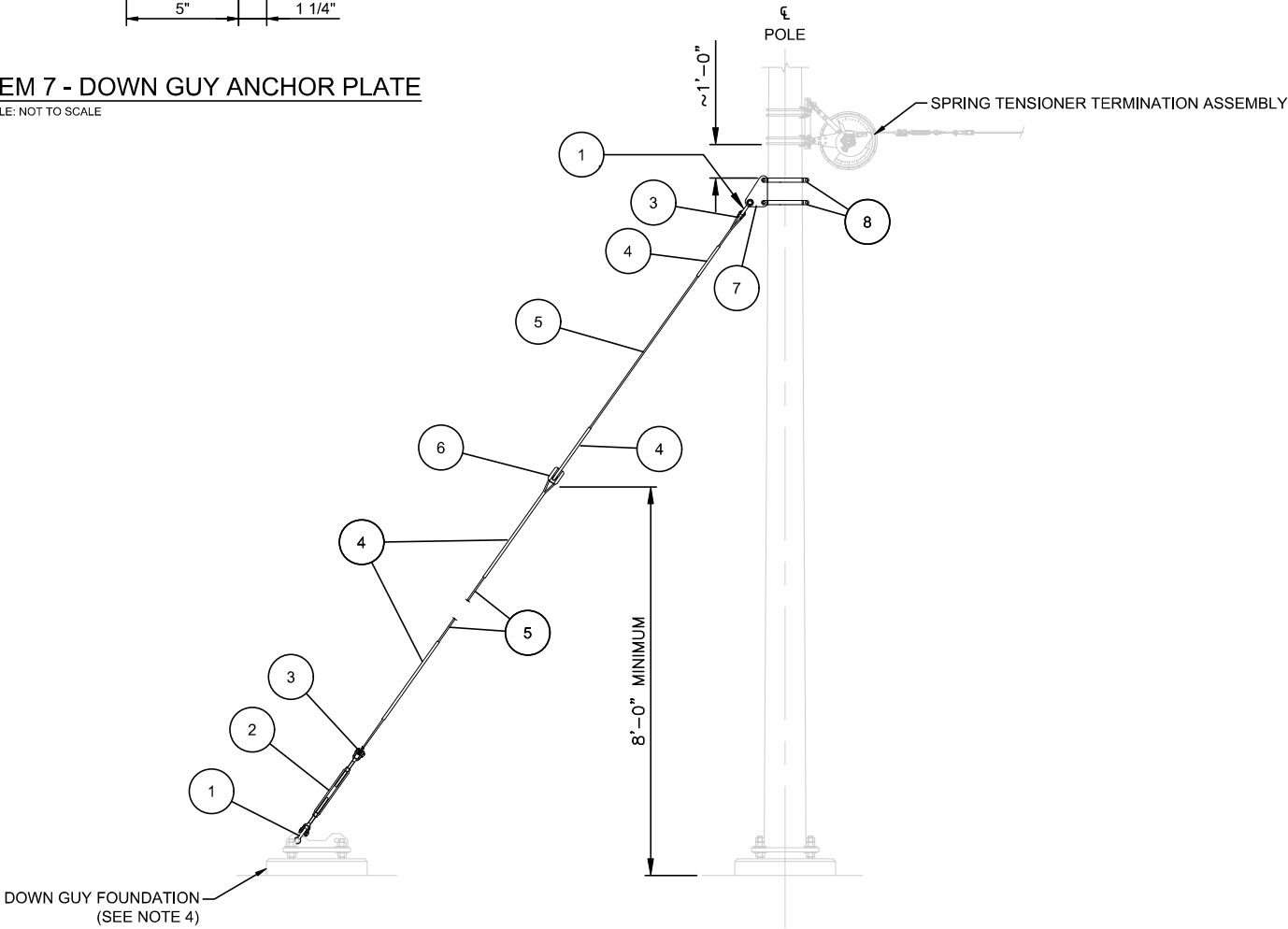
POLE DESIGNATION								
POLE TYPE	POLE BASE OUTSIDE DIAMETER (IN)	WALL THICKNESS "TW" (IN)	POLE BASE				ANCHOR BOLT DIA. ("A") (IN)	ALLOWABLE BENDING MOMENT (FT-LBS)
			SQUARE "SQ" (IN)	BOLT CIRCLE "D" (IN)	THICKNESS "T" (IN)	ANCHOR BOLT HOLE "Z" (IN)		
P-1L / P-1L-C	11	0.3750	20	17	2	1 13/16	1 1/2	71,250
P-2L / P-2L-C	10	0.5000	19	16	2	2 5/16	2	90,000
P-3L / P-3L-C	11	0.5000	20	17	2	2 5/16	2	112,500
P-4L / P-4L-C	13	0.6250	23	20	2	2 13/16	2 1/2	195,000
P-5L / P-5L-C	16	0.6250	26	23	2 1/2	2 13/16	2 1/2	303,750

"C" DENOTES THE USE OF A CORROSION COLLAR AT THE BASE OF THE POLE. POLE IS TYPICALLY EMBEDDED. SEE DRAWING Y021 FOR CORROSION COLLAR DETAILS.

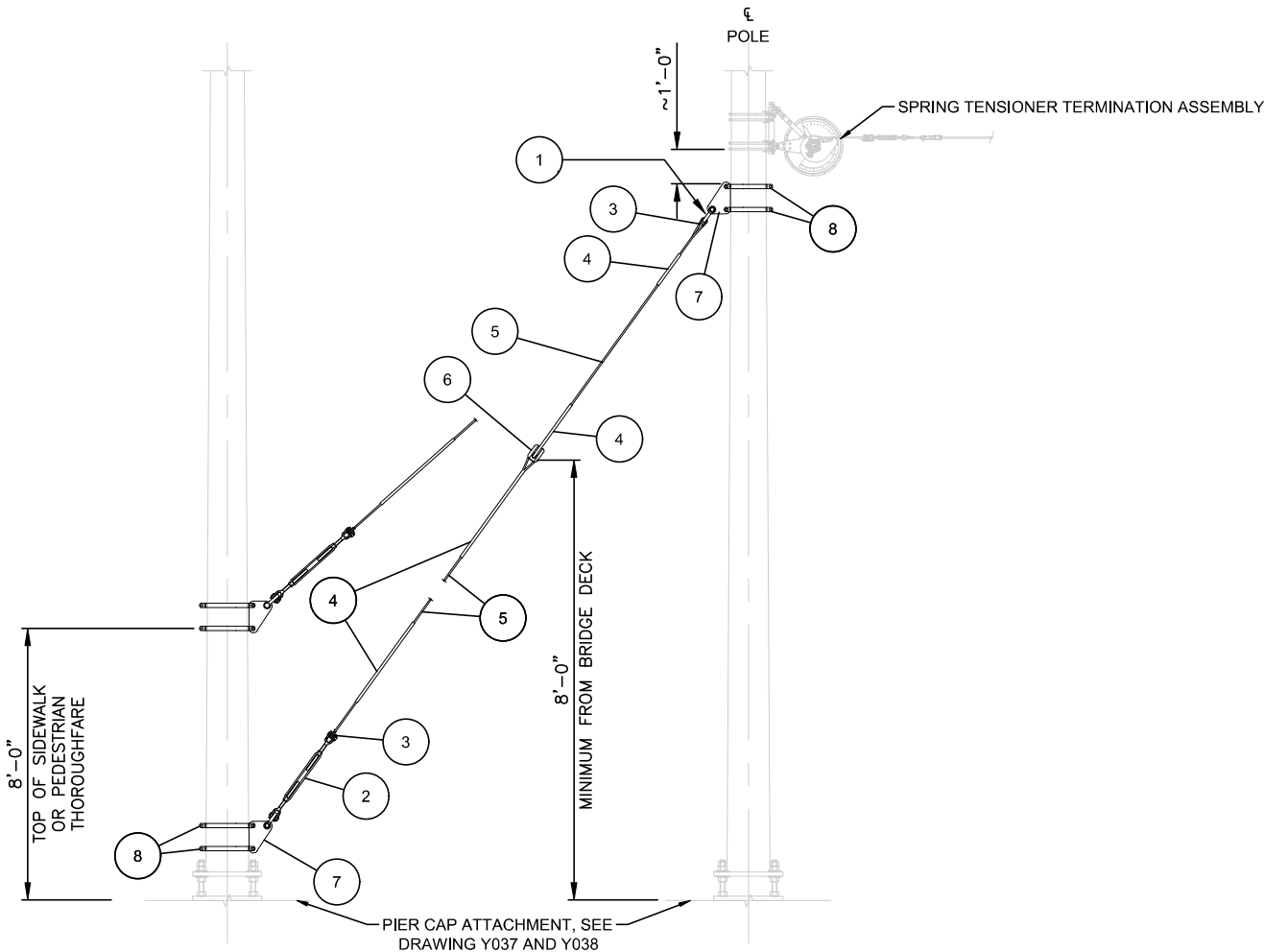
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM STRUCTURAL DETAILS STREET LIGHT POLE DETAIL	SCALE FOR 22"x34": NOT TO SCALE		
			CHECKED BY	BP									FILENAME: Y023.dwg	DRAWING NO.: Y023	SHEET NO.: 341
			DRAWN BY	PFW									CONTRACT NO.: CONTRACT NO. ###		
			CHECKED BY	BP									VOLUME: 1		
			APPROVED BY	NKS											
PLOT DATE: 12/22/2022			7:47:44 AM		DATE	12/23/2022	NOT FOR CONSTRUCTION								



ITEM 7 - DOWN GUY ANCHOR PLATE
SCALE: NOT TO SCALE



DOWN GUY ASSEMBLY - DGA-01
SCALE: NOT TO SCALE



DOWN GUY ASSEMBLY - DGA-02
SCALE: NOT TO SCALE

BILL OF MATERIALS					
ITEM	DGA-01	DGA-02	DESCRIPTION	SUPPLIER	PART NUMBER
1	4	4	SHACKLE, 1" DIA, BOLT TYPE	CROSBY	1019551
2	2	2	TURNBUCKLE, 1"X18" C+C	CROSBY	1032830
3	4	4	THIMBLE	CROSBY	1037595
4	8	8	PREFORMED END FITTING, 1/2" STRAND	PREFORMED LINE PRODUCTS	BG-2115
5	A/R	A/R	SPAN WIRE, 1/2" EHS	-	ASTM A475
6	2	2	JB PORCELAIN INSULATOR	MACLEAN	L506
7	1	2	DOWN GUY ANCHOR PLATE	-	-
8	4	6	POLE CLAMP	MAC	SEE DWG. Y044

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- STRUCTURAL STEEL PLATE TO CONFORM TO ASTM A572.
- ALL STRUCTURAL STEEL SHALL BE GALVANIZED AND SHALL CONFORM TO ASTM A123 AND ASTM 153.
- FOR DOWN GUY FOUNDATION DETAILS SEE DRAWING Y035.
- FOR DISTANCE OF DOWN GUY FOUNDATION FROM POLE, SEE LAYOUT DRAWINGS.

REV	DATE	DESCRIPTION	DESIGNED BY	CHK
			CHECKED BY	BP
			DRAWN BY	GK
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022



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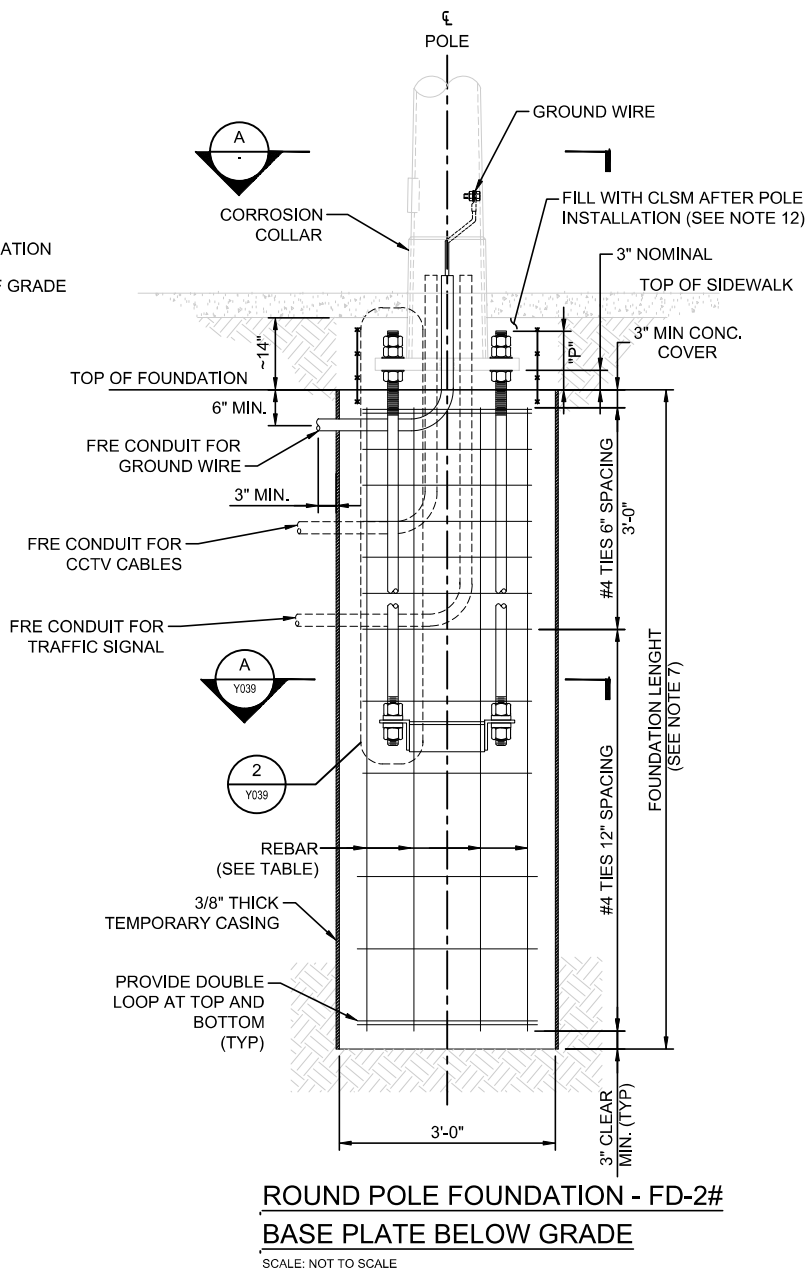
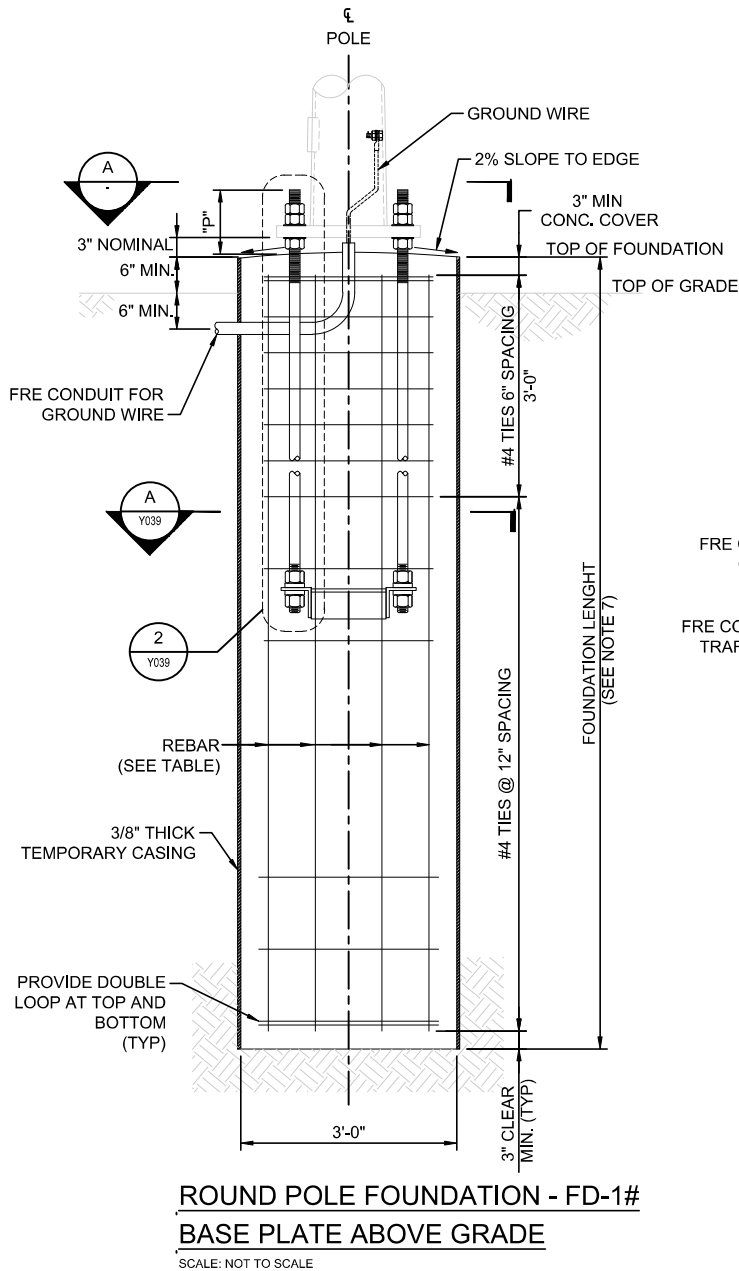
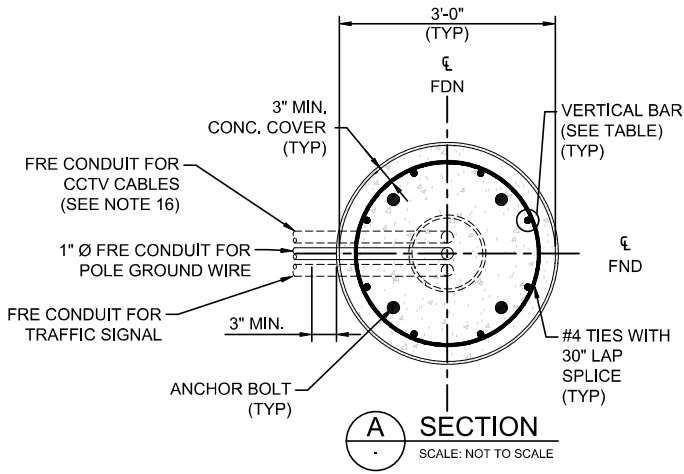
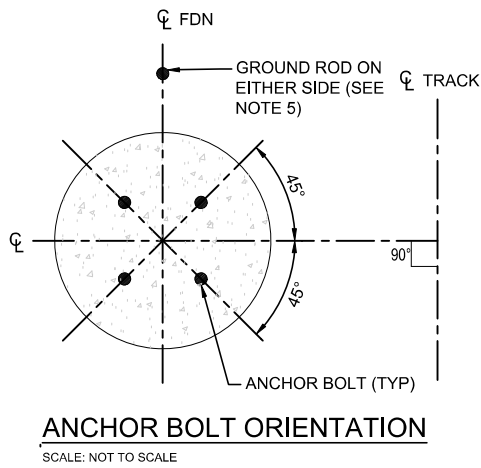
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Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

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KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
STRUCTURAL DETAILS
DOWN GUY ASSEMBLY

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: Y025.dwg	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y025	SHEET NO.: 342



NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55, WITH THE EXCEPTION FOR FOUNDATIONS FD-1E AND FD-2E WHICH SHALL CONFORM TO ASTM F1544 GRADE 105. ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.
- PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION AND CONCRETE POUR. COAT BOLTS AND NUTS WITH GREASE FOR FACILITATION OF FUTURE CONCRETE REMOVAL
- CAP AND PROTECT THE CONDUITS DURING CONSTRUCTION.
- GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE CONTRACTOR SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY. IF STEEL DRILLING CAISSON REMAINS IN PLACE, OMIT GROUND RODS AND USE CAISSON AS GROUNDING ELECTRODE.
- GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS, AT 68°F.
- FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS Y111 AND Y112.
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4 KSI. CONCRETE SHALL HAVE A MAXIMUM 3/4" COARSE AGGREGATE SIZE.
- REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.
- IF CONSTRUCTION OF FD-2# IS NOT POSSIBLE DUE TO UNFORESEEN RESTRICTIONS, CONTRACTOR MAY USE FD-1# AND SHALL INFORM THE ENGINEER BEFORE DOING SO.
- WHERE POLE FOUNDATIONS ARE IN LANDSCAPE AREAS, USE FOUNDATION FD-1#. FOR ALL PAVED AND SIDEWALK AREAS, USE FOUNDATION FD-2#.
- FOR FOUNDATIONS FD-2#, APPLY GREASE ON ALL EMBEDDED BOLTS THREADS AND NUTS, SUCH THAT IT WILL PREVENT CONCRETE FROM STICKING, AND FILL VOID BELOW SIDEWALK TO TOP OF CONCRETE WITH FLOWABLE FILL CONCRETE (CONTROLLED LOW STRENGTH CONCRETE PER ACI 229R. COMPRESSIVE STRENGTH SHALL BE 150-200 PSI.
- SEAL ALL CONDUIT OPENINGS WITH DUCT PLUGS, DUCT SEAL, OR OTHER SEALING METHOD TO BE APPROVED BY THE ENGINEER.
- FACE OF POLE TO FACE OF CURB DISTANCE TO BE NO LESS THAN 18" UNLESS STATED OTHERWISE AT INDIVIDUAL POLE LOCATIONS. DISTANCE MAY BE GREATER DEPENDENT UPON LOCATION WHERE STATED.
- DEPTH OF CAISSON BELOW ROAD PAVING TO BE DETERMINED BY THE CONTRACTOR AT THE TIME OF INSTALLATION AND/OR BY DIRECTION OF THE ENGINEER.
- FOUNDATION DESIGNATIONS HAVE AN ALPHABETICAL LETTER SIGNIFYING THE TYPE OF POLE AND ITS BOLT HOLE CIRCLE AS FOLLOWS:
A - POLE TYPE P1
B - POLE TYPE P2
C - POLE TYPE P3
D - POLE TYPE P4
E - POLE TYPE P5

FOUNDATION/ ANCHOR BOLT TABLE						
FDN. TYPE	FOUNDATION		ANCHOR BOLT			
	VERTICAL REBAR		BOLT CIRCLE "B" (IN)	ANCHOR BOLT DIA. "A" (IN)	ANCHOR BOLT PROJECTION "P" (IN)	ANCHOR BOLT LENGTH "C" (IN)
	SIZE	TOTAL				
FD-1A	#9	8	15	1 1/2	10	72
FD-1B	#9	8	16	2	12	72
FD-1C	#9	8	17	2	12	72
FD-1D	#9	10	20	2 1/2	14	74
FD-1E	#9	10	23	2 1/2*	14	74
FD-2A	#9	8	15	1 1/2	10	72
FD-2B	#9	8	16	2	12	72
FD-2C	#9	8	17	2	12	72
FD-2D	#9	10	20	2 1/2	14	74
FD-2E	#9	10	23	2 1/2*	14	74

* ANCHOR BOLTS FOR FOUNDATIONS FD-1E AND FD-2E ARE TO BE COLOR CODED IN THE ANCHOR ROD BODY, SUCH THAT THEY ARE DISTINGUISHABLE FROM ALL OTHER ANCHORS.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW
			CHECKED BY	BP
			DRAWN BY	CA
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/22/2022			DATE	12/23/2022



ISSUE FOR BID

DATE: 12-23-2022

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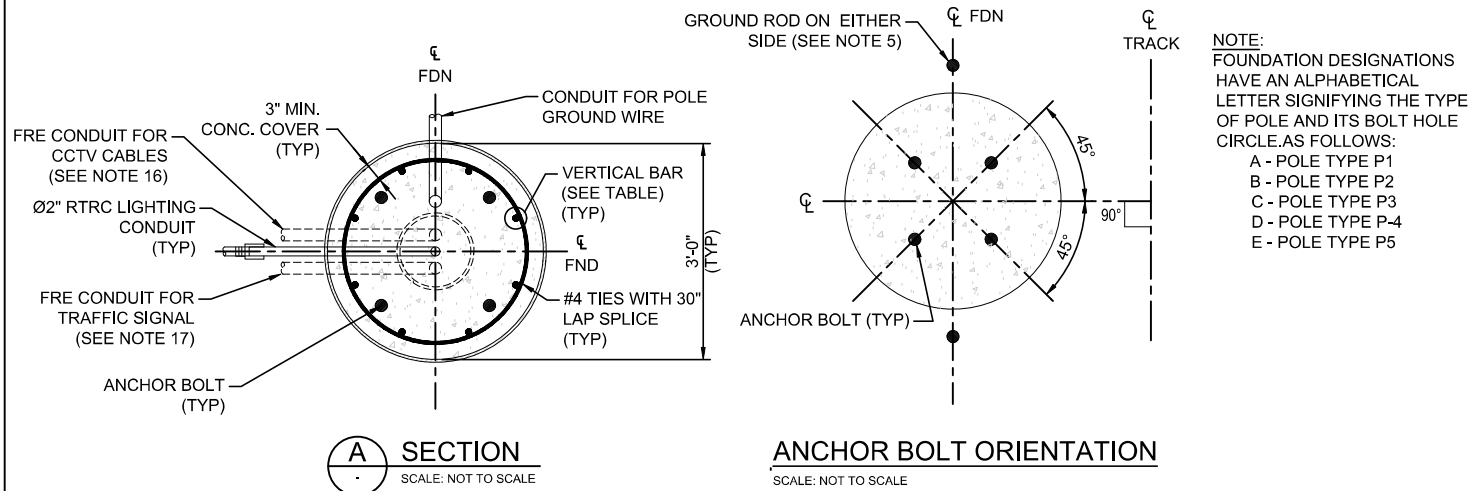
The HNTB COMPANIES
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NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
STRUCTURAL DETAILS
TYPICAL FOUNDATION DETAIL

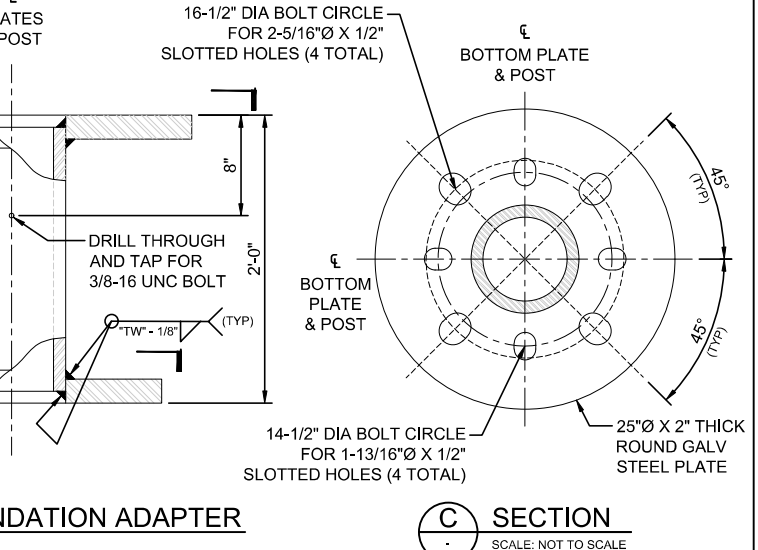
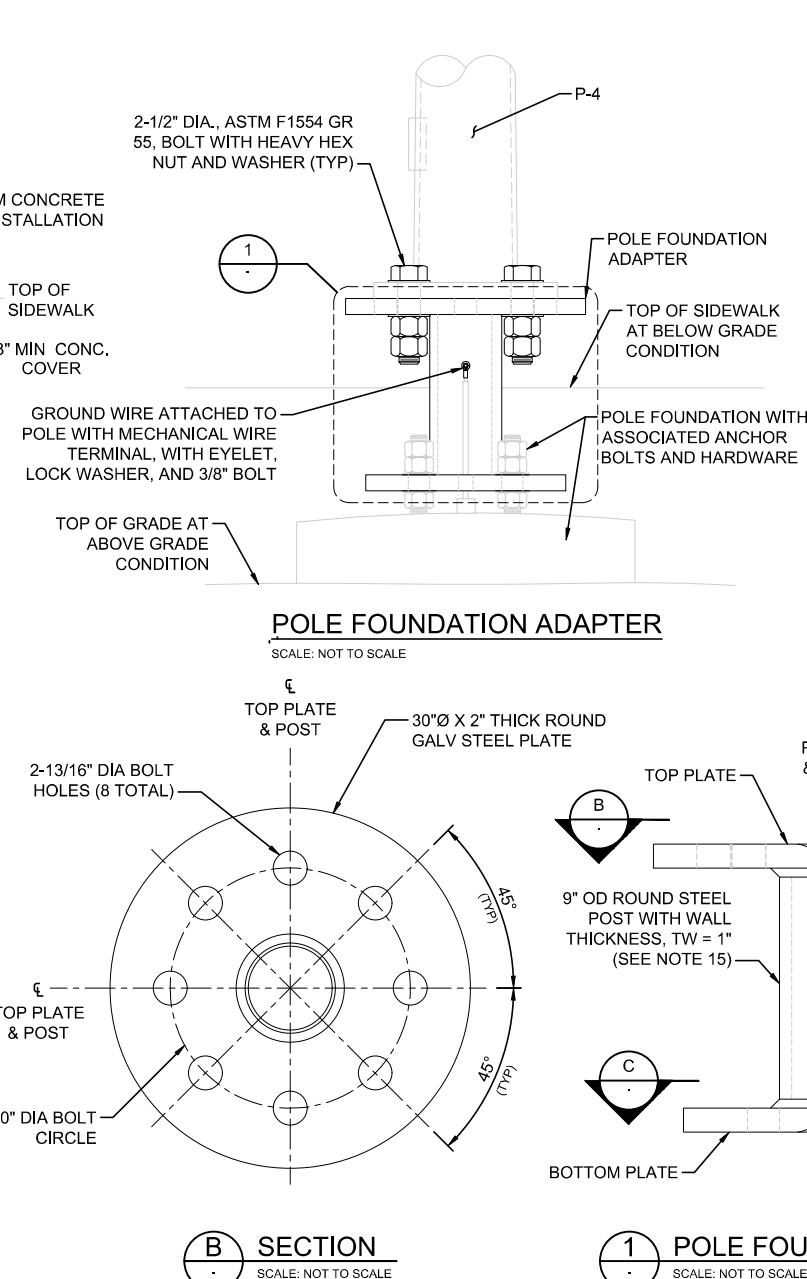
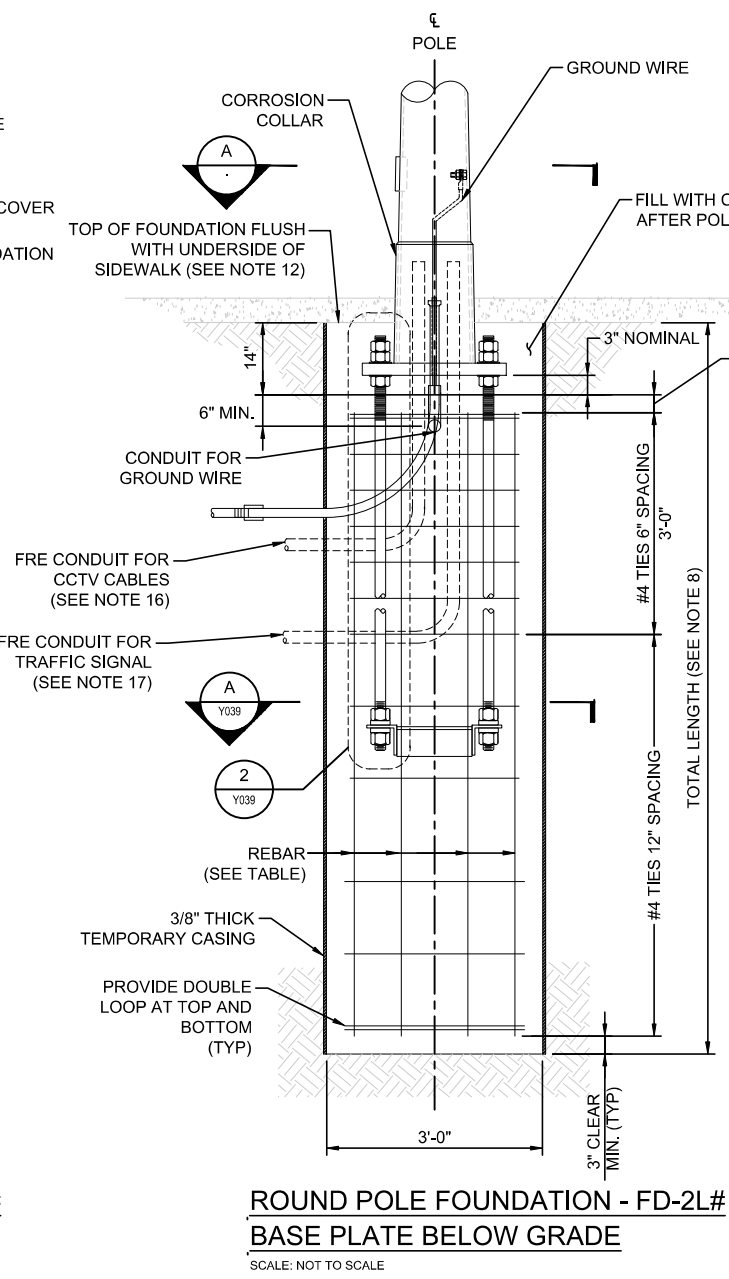
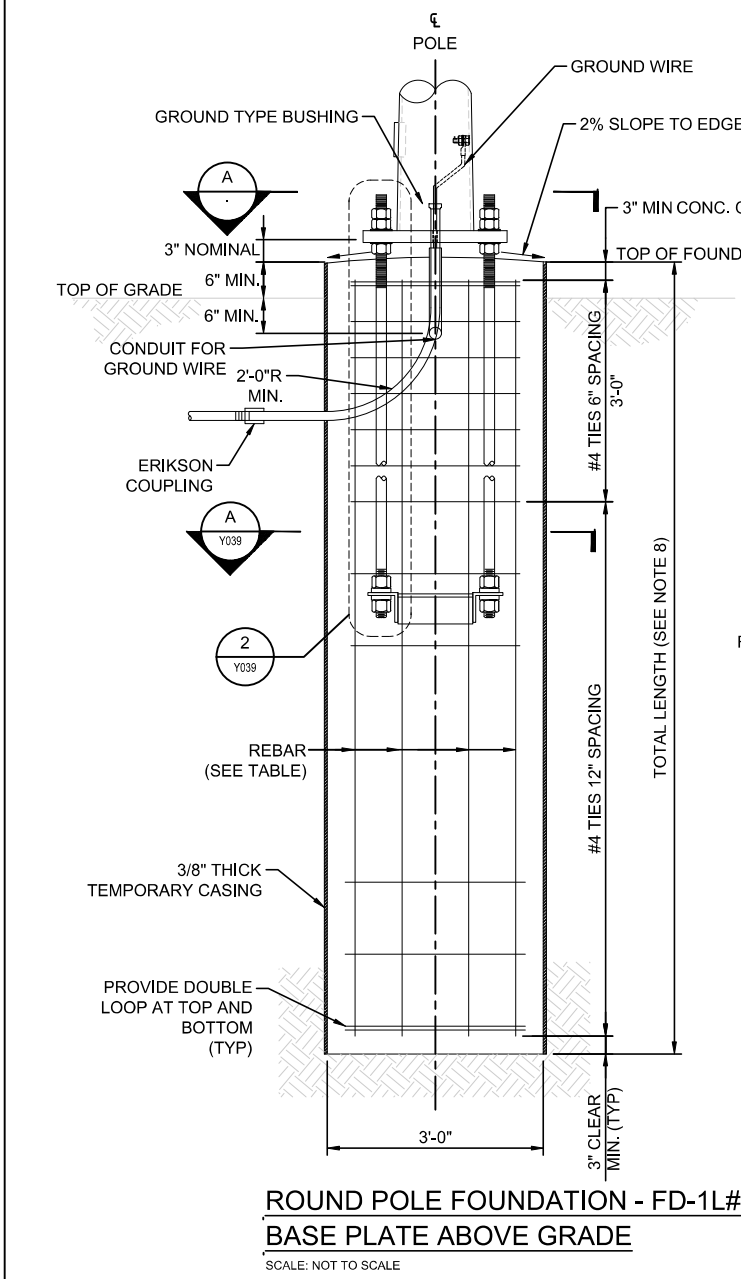
SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: Y031.dwg	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y031	SHEET NO.: 343



FOUNDATION/ ANCHOR BOLT TABLE					
FDN. TYPE	FOUNDATION		ANCHOR BOLT		
	SIZE	TOTAL	BOLT CIRCLE "B" (IN)	ANCHOR BOLT DIA. "A" (IN)	ANCHOR BOLT PROJECTION "P" (IN)
FD-1LA	#9	8	15	1 1/2	10
FD-1LB	#9	8	16	2	12
FD-1LC	#9	8	17	2	12
FD-1LD	#9	10	20	2 1/2	14
FD-1LE	#9	10	23	2 1/2*	14
FD-2LA	#9	8	15	1 1/2	10
FD-2LB	#9	8	16	2	12
FD-2LC	#9	8	17	2	12
FD-2LD	#9	10	20	2 1/2	14
FD-2LE	#9	10	23	2 1/2*	14

* ANCHOR BOLTS FOR FOUNDATIONS FD-1LE AND FD-2LE TO BE COLOR CODED IN THE ANCHOR ROD BODY, SUCH THAT THEY ARE DISTINGUISHABLE FROM ALL OTHER ANCHORS.

- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55, WITH THE EXCEPTION FOR FOUNDATIONS FD-1LE, AND FD-2LE WHICH SHALL CONFORM TO ASTM F1544 GRADE 105. ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.
 - PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION.
 - CAP AND PROTECT THE CONDUITS DURING CONSTRUCTION.
 - GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE INSTALLER SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY. IF STEEL DRILLING CAISSON REMAINS IN PLACE, OMIT GROUND RODS AND USE CAISSON AS GROUNDING ELECTRODE.
 - GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS.
 - FOR FOUNDATIONS LOCATED IN LANDSCAPE AREA, TOP OF FOUNDATIONS SHOULD BE LEVEL WITH TOP OF FINISH GRADE.
 - FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS Y111 AND Y112.
 - CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4 KSI. CONCRETE SHALL HAVE A MAXIMUM 3/4" COARSE AGGREGATE.
 - REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.
 - WHEN EMBEDDING THE BASE PLATE IN THE FOUNDATION IS NOT POSSIBLE, CONTRACTOR SHALL REFERENCE THE BASE PLATE ABOVE FOUNDATION DETAIL.
 - FOR FOUNDATIONS FD-2#, APPLY GREASE ON ALL EMBEDDED BOLTS THREADS AND NUTS, SUCH THAT IT WILL PREVENT CONCRETE FROM STICKING, AND FILL VOID BELOW SIDEWALK TO TOP OF CONCRETE WITH FLOWABLE FILL CONCRETE (CONTROLLED LOW STRENGTH CONCRETE PER ACI 229R. COMPRESSIVE STRENGTH SHALL BE 150-200 PSI.
 - WHERE ROUND POLE FOUNDATIONS ARE IN LANDSCAPE AREAS, USE FOUNDATION FD-1L. FOR ALL PAVED AND SIDEWALK AREAS, USE FOUNDATION FD-2L.
 - FACE OF POLE TO FACE OF CURB DISTANCE TO BE NO LESS THAN 18" UNLESS STATED OTHERWISE AT INDIVIDUAL POLE LOCATIONS. DISTANCE MAY BE GREATER DEPENDENT UPON LOCATION WHERE STATED.
 - POST MAY BE OF MULTIPLE PLYS TO ACHIEVE SPECIFIED WALL THICKNESS. EACH PLY SHALL HAVE A MINIMUM YIELD STRENGTH OF 55 KSI.
 - FOR LOCATION OF CCTV CAMERAS SEE DRAWINGS Y111 THROUGH Y112. SEE DRAWING P403 FOR CCTV CONDUIT ARRANGEMENT AND DETAILS.
 - FOR LOCATION OF TRAFFIC SIGNALS SEE DRAWINGS Y111 AND Y112. REFER TO TRAFFIC SIGNAL DRAWINGS FOR CONDUIT ARRANGEMENT AND DETAILS.



REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Y033.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: Y033	SHEET NO.: 344
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			DRAWN BY	CA			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270			
			CHECKED BY	BP							
			APPROVED BY	NKS							

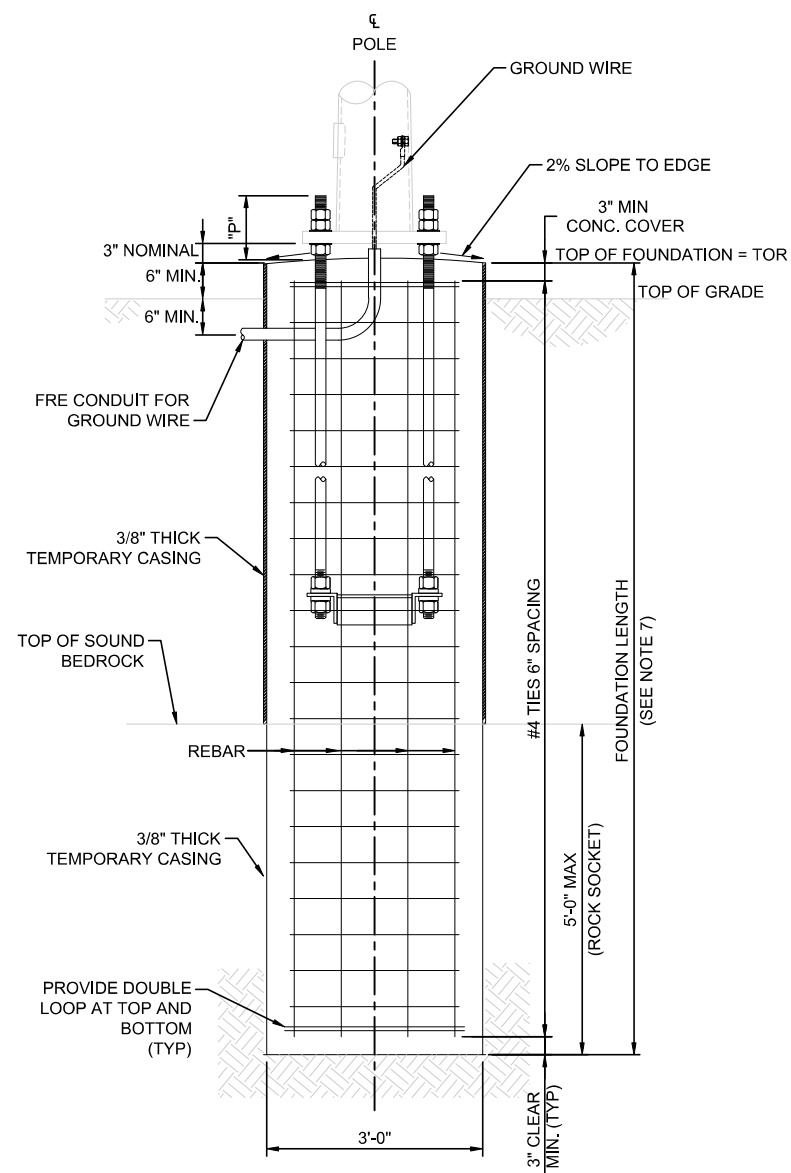
PLOT DATE: 12/22/2022 8:09:43 AM DATE: 12/23/2022

NOT FOR CONSTRUCTION



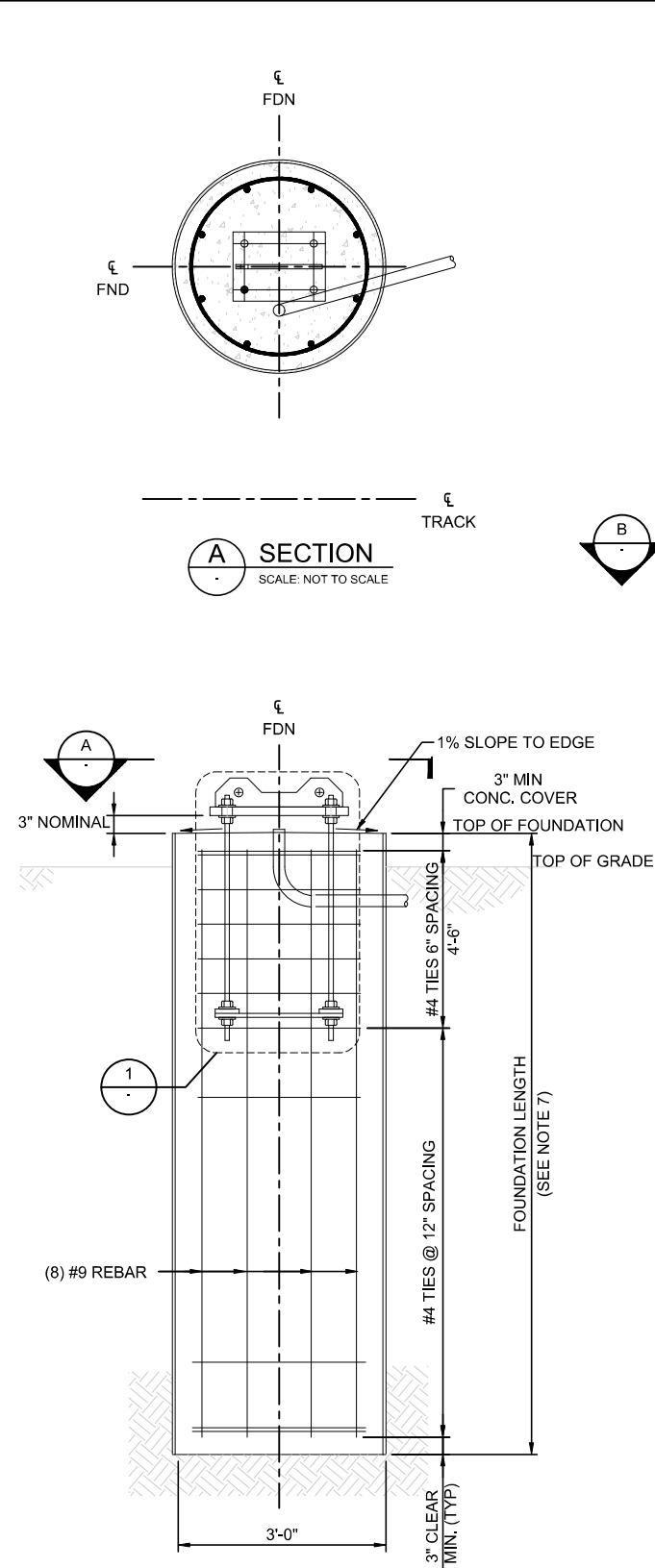
- NOTES:**
1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 2. GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE CONTRACTOR SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY.
 3. GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS.
 4. POLE TO BE PRESSED INTO SOIL IN BOTTOM OF HOLE 6". IF ELECTRICAL RESISTANCE MEASUREMENT IS GREATER THAN 25 OHMS AT 68°F, USE STEEL CAISSON AS GROUNDING ELECTRODE AND CONNECT TO POLE AS SHOWN WITH EXOTHERMIC WELDS.
 5. FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE POLE AND FOUNDATION SCHEDULE ON DRAWINGS Y111 AND Y112.
 6. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI. CONCRETE SHALL HAVE A MAXIMUM 3/4" COARSE AGGREGATE.
 7. SEAL ALL CONDUIT OPENING WITH DUCT PLUGS, DUCT SEAL, OR OTHER SEALING METHOD TO BE APPROVED BY THE ENGINEER.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW	 	ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM STRUCTURAL DETAILS 2 FT DIAMETER FOUNDATION DETAIL	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	BP		 HNTB Engineering, Inc. The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270		FILENAME: Y034.dwg
			DRAWN BY	CA					CONTRACT NO.:
			CHECKED BY	BP					CONTRACT NO. ###
			APPROVED BY	NKS					VOLUME: 1
PLOT DATE: 12/21/2022			1:30:02 PM		DATE 12/23/2022	NOT FOR CONSTRUCTION		DRAWING NO.: Y034	SHEET NO.: 345

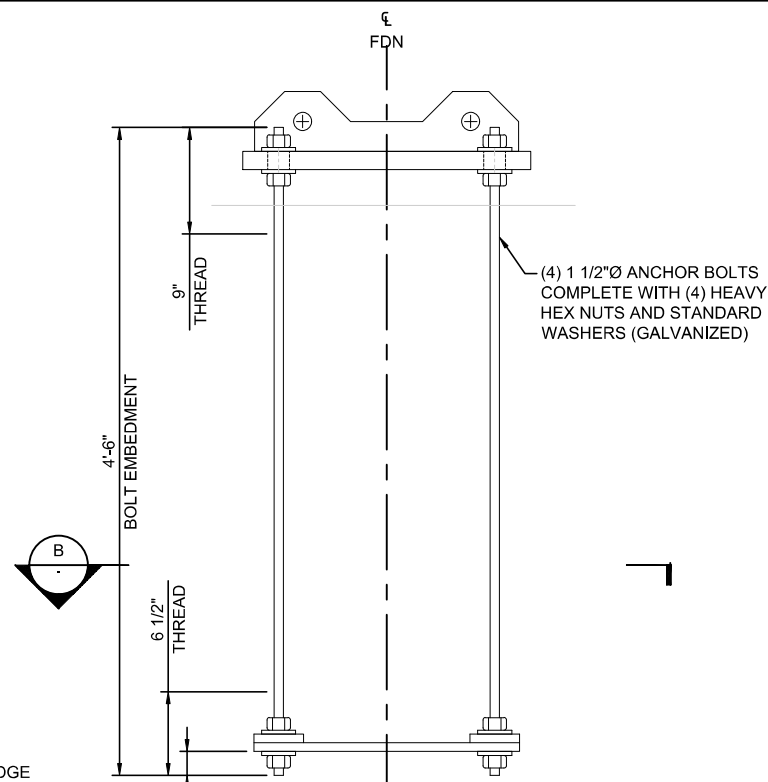


ROCK SOCKET DETAIL

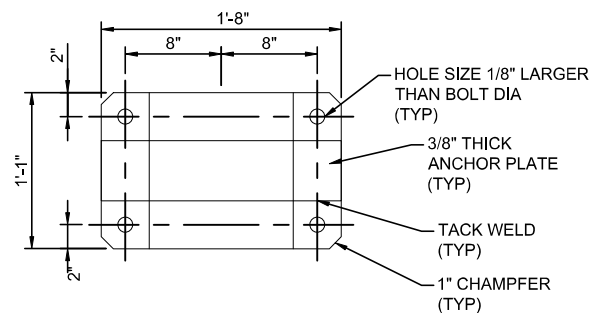
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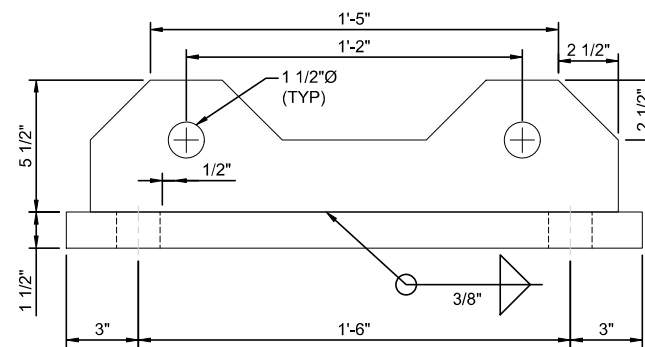
DOWN GUY FOUNDATION DETAIL - FG-01
SCALE: NOT TO SCALE



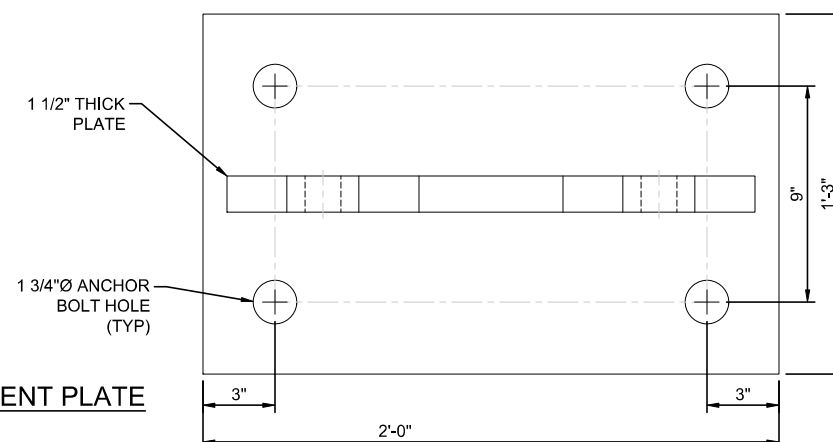
1 DETAIL
SCALE: NOT TO SCALE



B SECTION
SCALE: NOT TO SCALE



2 DETAIL - DOWN GUY ATTACHMENT PLATE
Y025 SCALE: NOT TO SCALE



- NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55, WITH THE EXCEPTION FOR FOUNDATIONS FD-1E AND FD-2E WHICH SHALL CONFORM TO ASTM F1544 GRADE 105. ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.
3. PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION AND CONCRETE POUR.
4. CAP AND PROTECT THE CONDUITS DURING CONSTRUCTION.
5. GROUND ROD LOCATION AND ORIENTATION RELATIVE TO TRACK AND FOUNDATION IS VARIABLE. THE CONTRACTOR SHALL TAKE CARE TO AVOID ANY UTILITIES BURIED ADJACENT TO THE FOUNDATION AND SHALL LOCATE GROUND ROD ACCORDINGLY. IF STEEL DRILLING CAISSON REMAINS IN PLACE, OMIT GROUND RODS AND USE CAISSON AS GROUNDING ELECTRODE.
6. GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS, AT 68°F.
7. FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS Y111 AND Y112.
8. CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4 KSI. CONCRETE SHALL HAVE A MAXIMUM 3/4" COARSE AGGREGATE SIZE.
9. REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.
10. SEAL ALL CONDUIT OPENING WITH DUCT PLUGS, DUCT SEAL, OR OTHER SEALING METHOD TO BE APPROVED BY THE ENGINEER.
11. FACE OF POLE TO FACE OF CURB DISTANCE TO BE NO LESS THAN 18" UNLESS STATED OTHERWISE AT INDIVIDUAL POLE LOCATIONS. DISTANCE MAY BE GREATER DEPENDENT UPON LOCATION WHERE STATED.

REV	DATE	DESCRIPTION	DESIGNED BY	GK
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			DRAWN BY	GK
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			2:58:40 PM	DATE 12/23/2022

DESIGNED BY	GK
CHECKED BY	BP
DRAWN BY	GK
CHECKED BY	BP
APPROVED BY	NKS
DATE	12/23/2022



ISSUE FOR BID

DATE: 12-23-2022



FDR HDR En
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856



The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

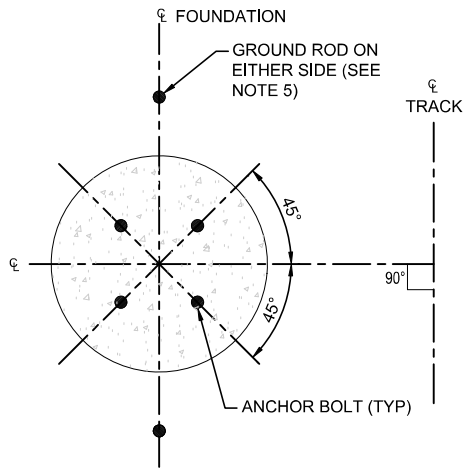
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2 KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

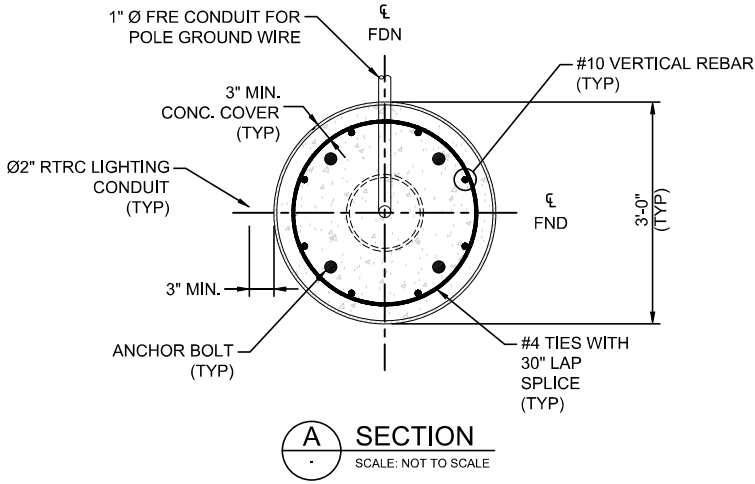
OVERHEAD CONTACT SYSTEM
STRUCTURAL DETAILS
ROCK SOCKET AND DOWN GUY
FOUNDATION DETAILS

SCALE FOR 22"x34": NOT TO SCALE	
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CONTRACT NO.:	
CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.:	SHEET
Y035	3

303178

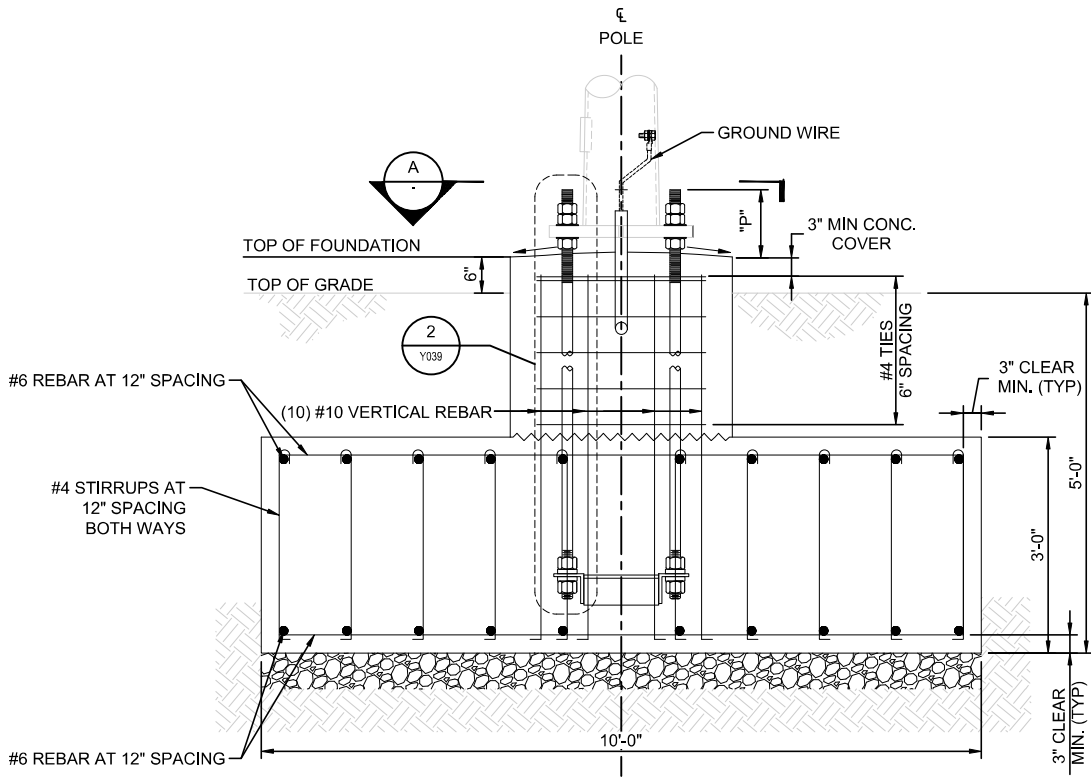


ANCHOR BOLT ORIENTATION
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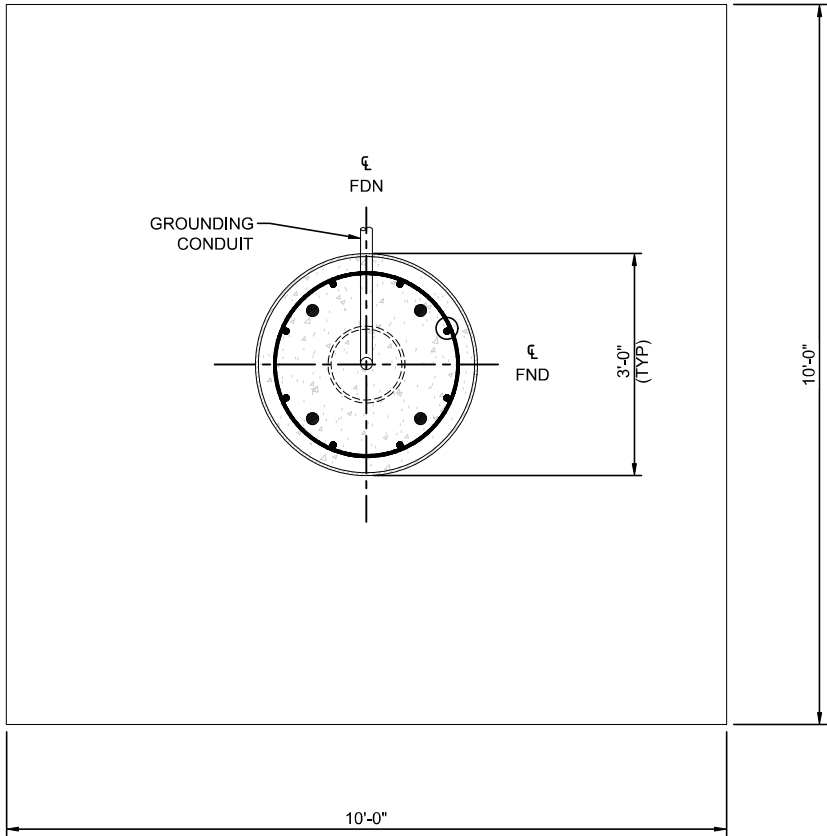


NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G020. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G022.
- ANCHOR BOLTS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM F1554 GRADE 55, ALL NUTS AND PLATE WASHERS SHALL BE HOT-DIP GALVANIZED STEEL CONFORMING TO ASTM A563 AND F436, RESPECTIVELY.
- PROTECT ANCHOR BOLTS ABOVE TOP OF FOUNDATION FROM DAMAGE AND RESIDUE CONCRETE DURING FOUNDATION CONSTRUCTION.
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- GROUND RESISTANCE FOR THE POLE SHALL BE 25 OHMS OR LESS.
- FOR SITE SPECIFIC FOUNDATION TYPE AND EMBEDMENT, SEE FOUNDATION SCHEDULE DRAWINGS Y111 THROUGH Y112.
- CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI. CONCRETE SHALL HAVE A MAXIMUM 3/8" COARSE AGGREGATE.
- REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60. REINFORCING STEEL SHALL BE EPOXY COATED.
- FOUNDATION SHALL BE BACK FILLED WITH STRUCTURAL FILL, WITH 6 INCHES OF CRUSH STONE AT THE BOTTOM OF FOUNDATION.



SPREAD FOOTING FOUNDATION - TYPE FD-4#
SCALE: NOT TO SCALE



PLAN VIEW - SPREAD FOOTING FOUNDATION

FOUNDATION/ ANCHOR BOLT TABLE					
FDN. TYPE	FOUNDATION		ANCHOR BOLT		
	REINFORCEMENT		BOLT CIRCLE "B" (IN)	ANCHOR BOLT DIA. "A" (IN)	ANCHOR BOLT PROJECTION "P" (IN)
	SIZE	TOTAL			
FD-4A	AS NOTED		17	1 1/2	10
FD-4B	AS NOTED		16	2	12
FD-4C	AS NOTED		17	2	12
FD-4D	AS NOTED		20	2 1/2	14

REV	DATE	DESCRIPTION	DESIGNED BY	AMA
			CHECKED BY	BP
			DRAWN BY	GK
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022

ISSUE FOR BID

DATE: 12-23-2022

HNTB

The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS

10450 Holmes Road
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Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
STRUCTURAL DETAIL
TYPICAL SPREAD FOOTING
FOUNDATION DETAIL

SCALE FOR 22"x34":
NOT TO SCALE

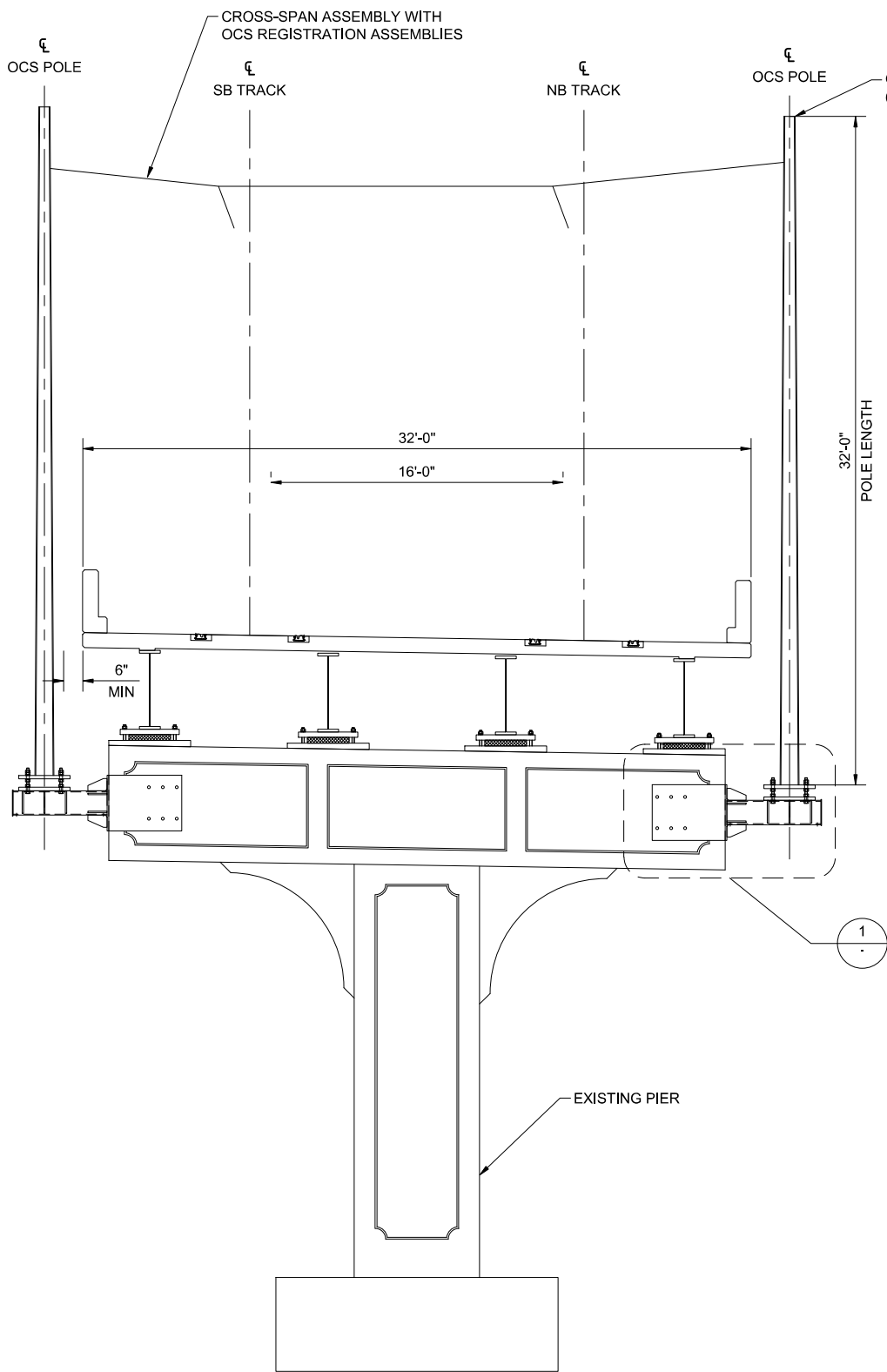
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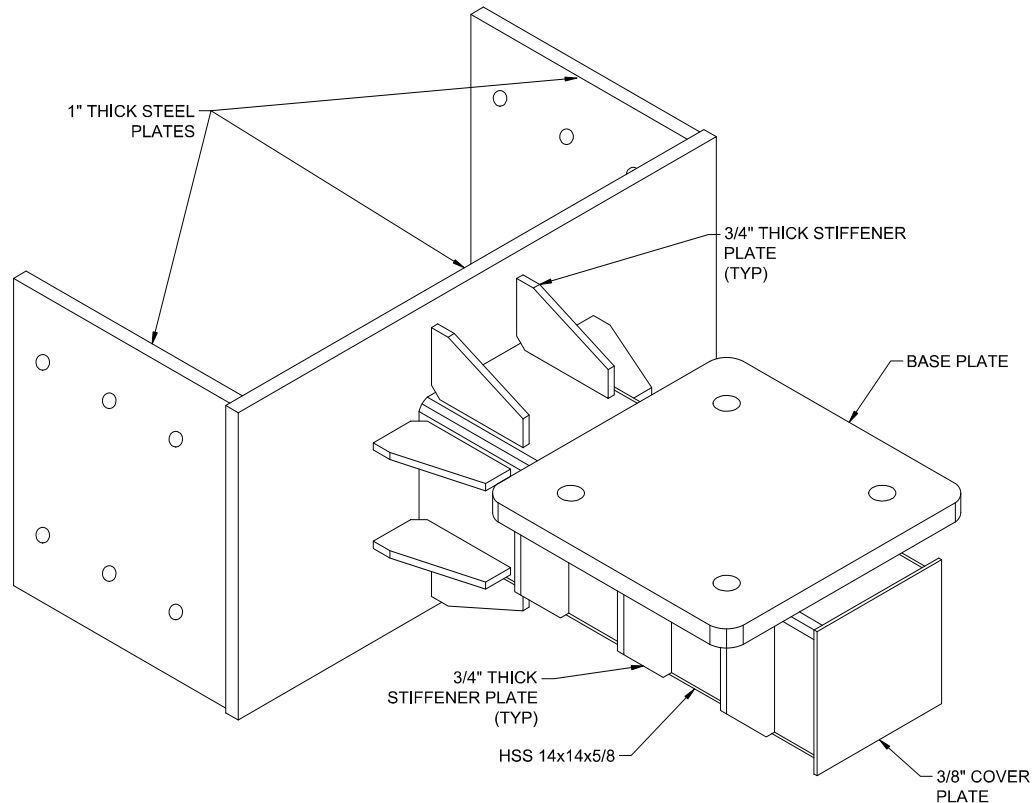
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DRAWING NO.:
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SHEET NO.:
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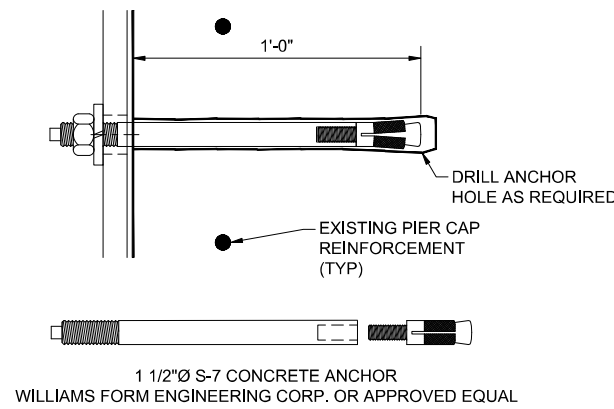


VIADUCT OCS TYPICAL STRUCTURE
SECTION VIEW

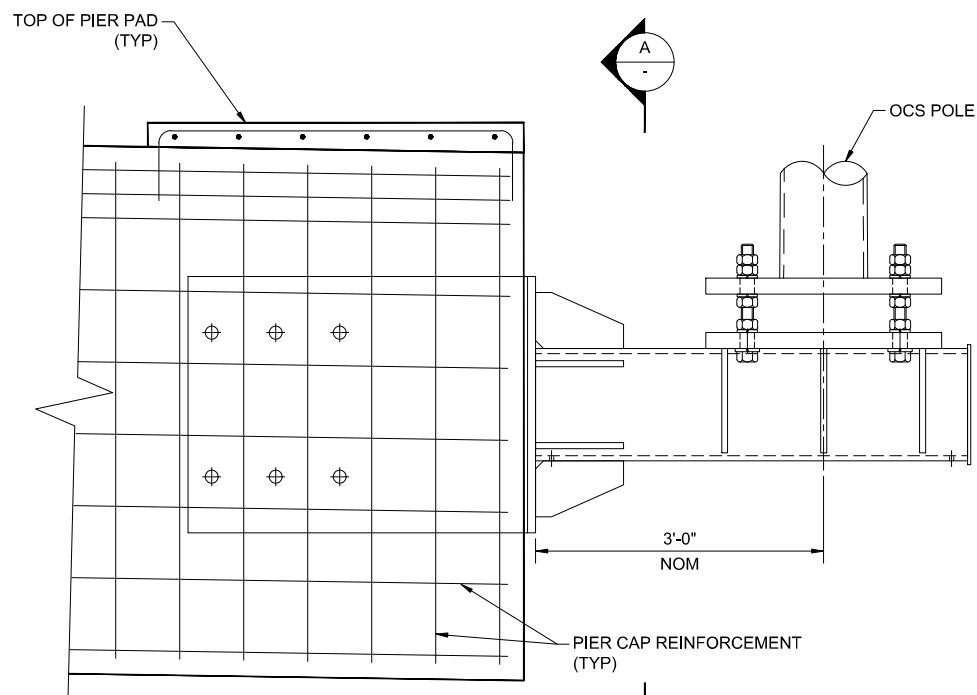


PIER CAP ATTACHMENT (CAP-#) - 3D RENDERING
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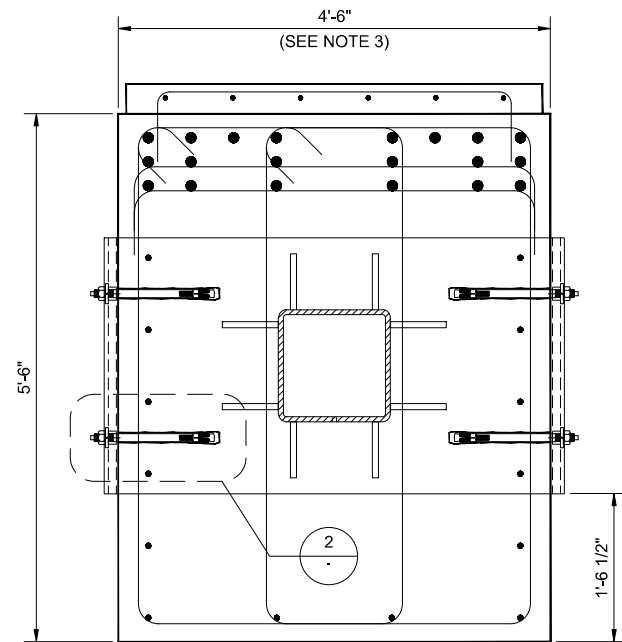
- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - FOR PIER CAP ATTACHMENT DETAILS REFER TO DWG Y038.
 - PIER CAP WIDTH OF 4'-6" AND REINFORCEMENT SPACING, "A", ARE BASED ON AS-BUILT DRAWINGS, GRAND BOULEVARD VIADUCT REPLACEMENT, LATEST REVISION DATES 06/09/2000. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN THE FIELD PRIOR TO FABRICATION OF THE PIER CAP ATTACHMENT ASSEMBLIES.
 - ANCHOR BOLTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 - CONTRACTOR TO SCAN CONCRETE FOR RE-BAR LOCATIONS BEFORE DRILLING.



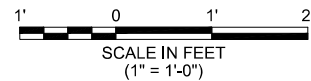
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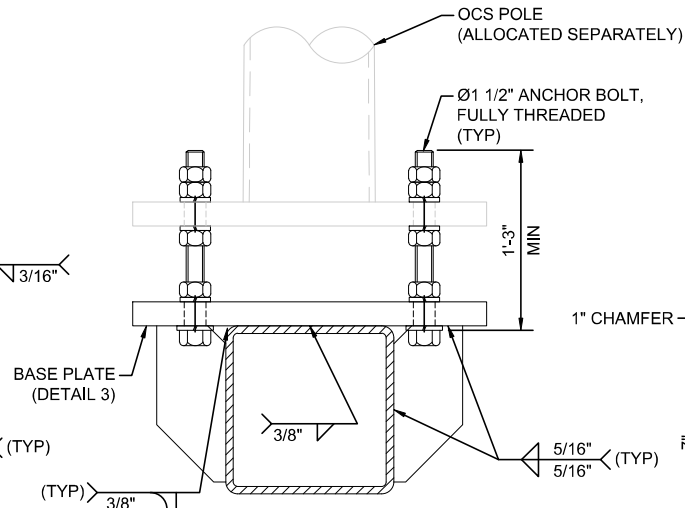
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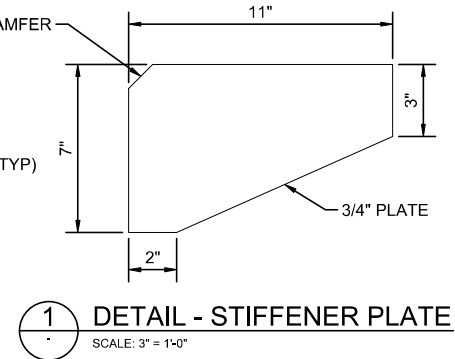
A
SECTION
SCALE: 1" = 1'-0"



REV	DATE	DESCRIPTION	DESIGNED BY	GK			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM POLE INSTALLATION DETAILS AT GRAND BOULEVARD VIADUCT (SHEET 1 OF 2)	SCALE FOR 22"x34": AS SHOWN FILENAME: Y037.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: SHEET NO.: Y037 348
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			CHECKED BY	BP									
			APPROVED BY	NKS									
PLOT DATE: 12/21/2022			1: 32: 59 PM		DATE		12/23/2022		NOT FOR CONSTRUCTION				



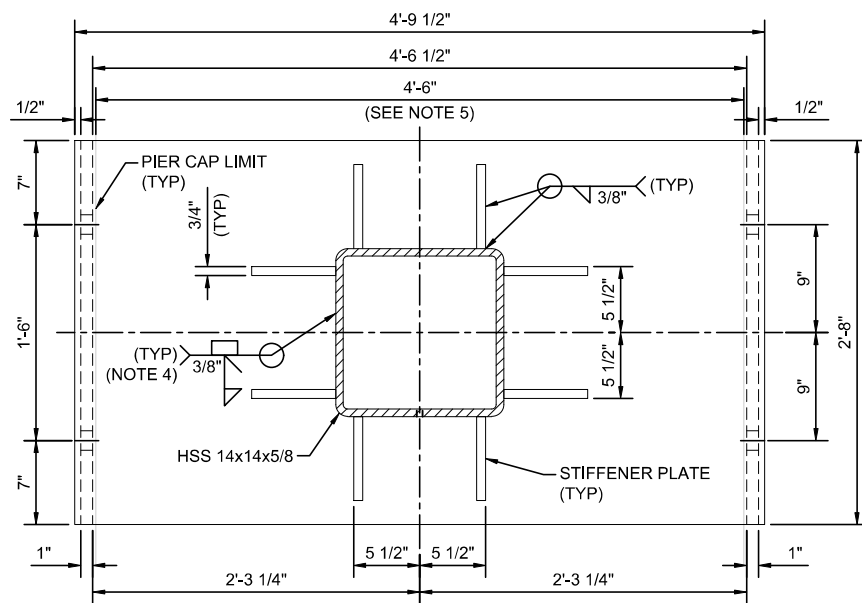
BASE PLATE ARRANGEMENT



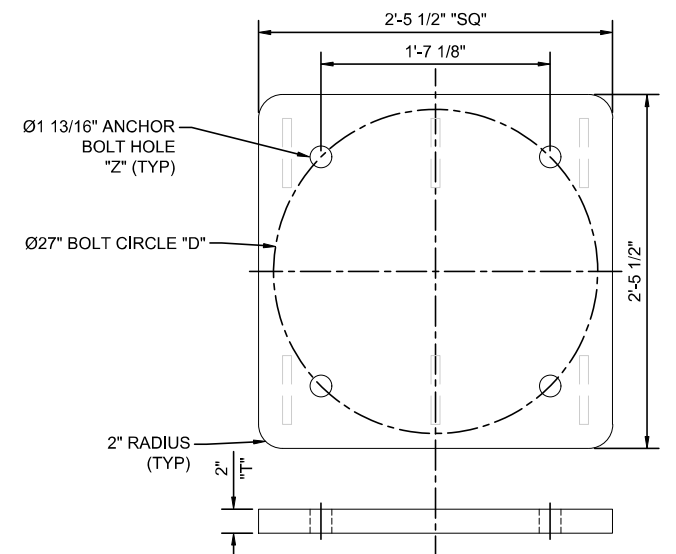
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DETAIL - STIFFENER PLATE

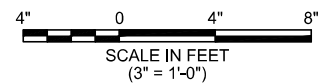
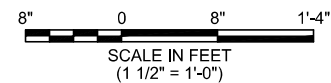
SCALE: 3" = 1'-0"



FRONT VIEW
1 1/2" = 1'-0"



3 DETAIL - BASE PLATE
SCALE: 1 1/2" = 1'-0"



PIER CAP ATTACHMENT DESIGNATION				
ASSEMBLY	VIADUCT PIER #	"A" (IN)	"B" (IN)	"C" (IN)
CAP-1	1, 4, 7, 8, 10	8.0	42.5	23.5
CAP-2	3, 9	9.0	47.0	26.0
CAP-3	2, 5, 6	10.0	51.5	28.5
CAP-4	11, 12, 13, 14	11.0	45.0	20.0

REV	DATE	DESCRIPTION	DESIGNED BY	GK
			CHECKED BY	BP
			DRAWN BY	GK
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			1: 34: 33 PM	DATE 12/23/2022



BHANUVADAN K PARKH - ENGINEER
LICENSE NO. 2021046193

ISSUE FOR BID



HDR Engineering, Inc.

10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 00085

DATE: 12-23-2022



The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
POLE INSTALLATION DETAILS
AT GRAND BOULEVARD VIADUCT
(SHEET 2 OF 2)

SCALE FOR 22"x34":
AS SHOWN

AS SHOWN
FILENAME:

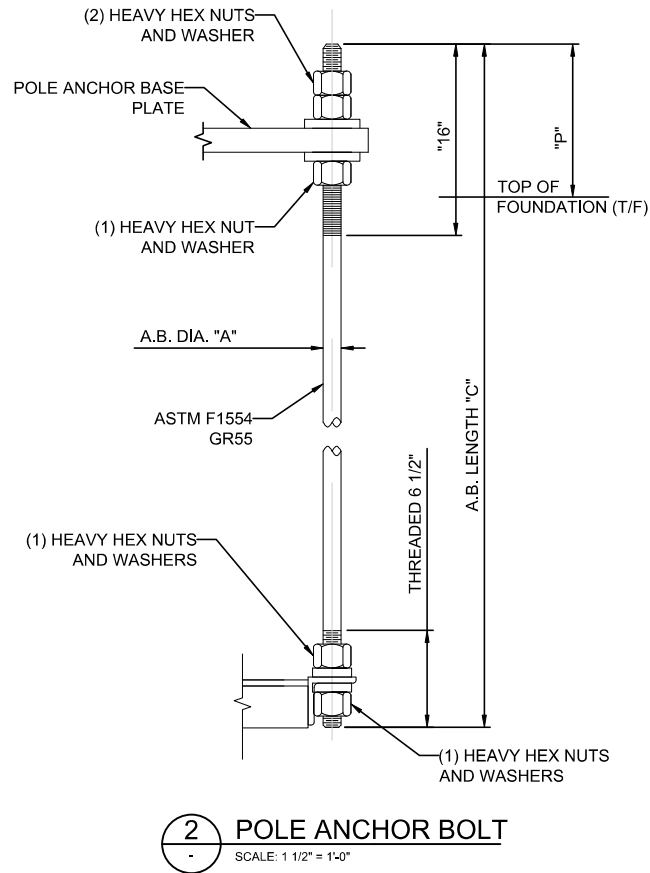
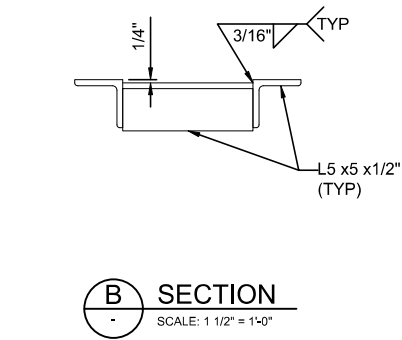
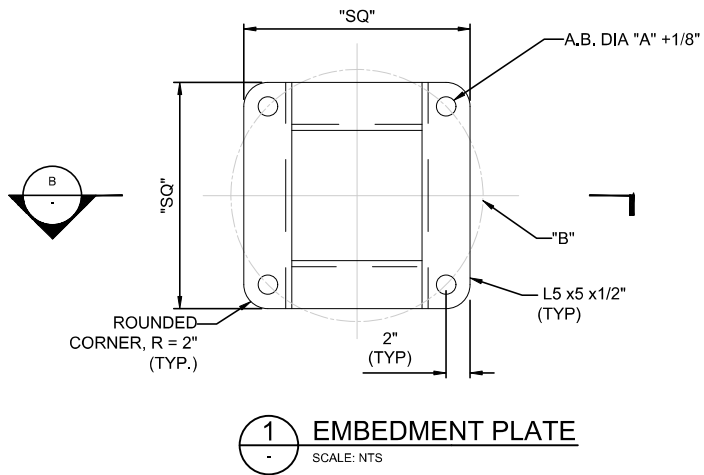
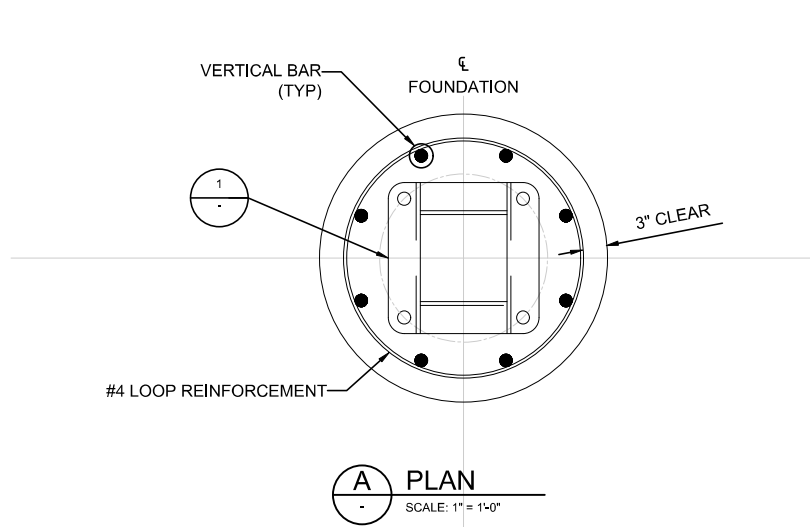
Y038.dwg
CONTRACT NO.:

CONTRACT NO. ###

VOLUME:

1	
DRAWING NO.:	SHEET NO.:

Y038	349
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NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- FOR POLE ANCHOR BASE PLATE DETAILS REFER TO DRAWING Y021.
- FOR FOUNDATION TYPE AND EMBEDMENT LENGTH, REFER TO POLE AND FOUNDATION SCHEDULE ON DRAWINGS Y111 AND Y112.
- SLOPE CONCRETE AWAY FROM ANCHOR BOLTS FOR WATER RUNOFF.
- FOR ADDITIONAL GROUNDING DETAIL, REFER TO DRAWING Y067.
- ANCHOR BOLTS, NUTS, AND FLAT WASHERS TO BE HOT DIPPED GALVANIZED PER ASTM F2329 WITH A COATING THICKNESS OF 0.0020 INCHES.

FOUNDATION/ ANCHOR BOLT TABLE					
FOUNDATION		ANCHOR BOLT			
FDN. TYPE	SQUARE "SQ"	BOLT CIRCLE "B" (IN)	ANCHOR BOLT DIA. "A" (IN)	ANCHOR BOLT PROJECTION "P" (IN)	ANCHOR BOLT LENGTH "C" (IN)
FD-##A	18	15	1 1/2	10	72
FD-##B	19	16	2	12	72
FD-##C	20	17	2	12	72
FD-##D	23	20	2 1/2	14	74
FD-##E	25	22	2 1/2*	14	74

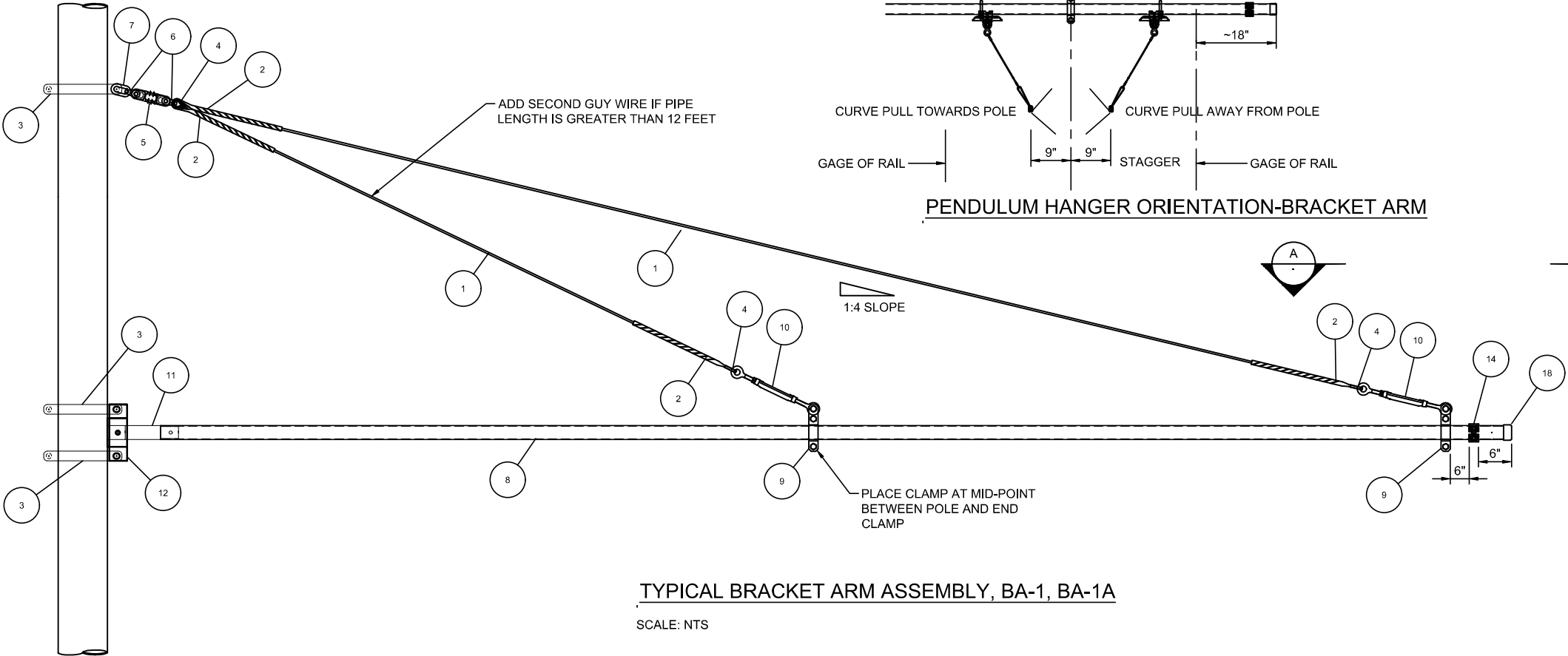
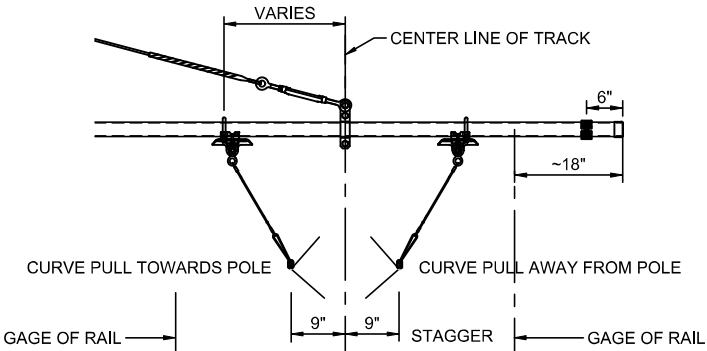
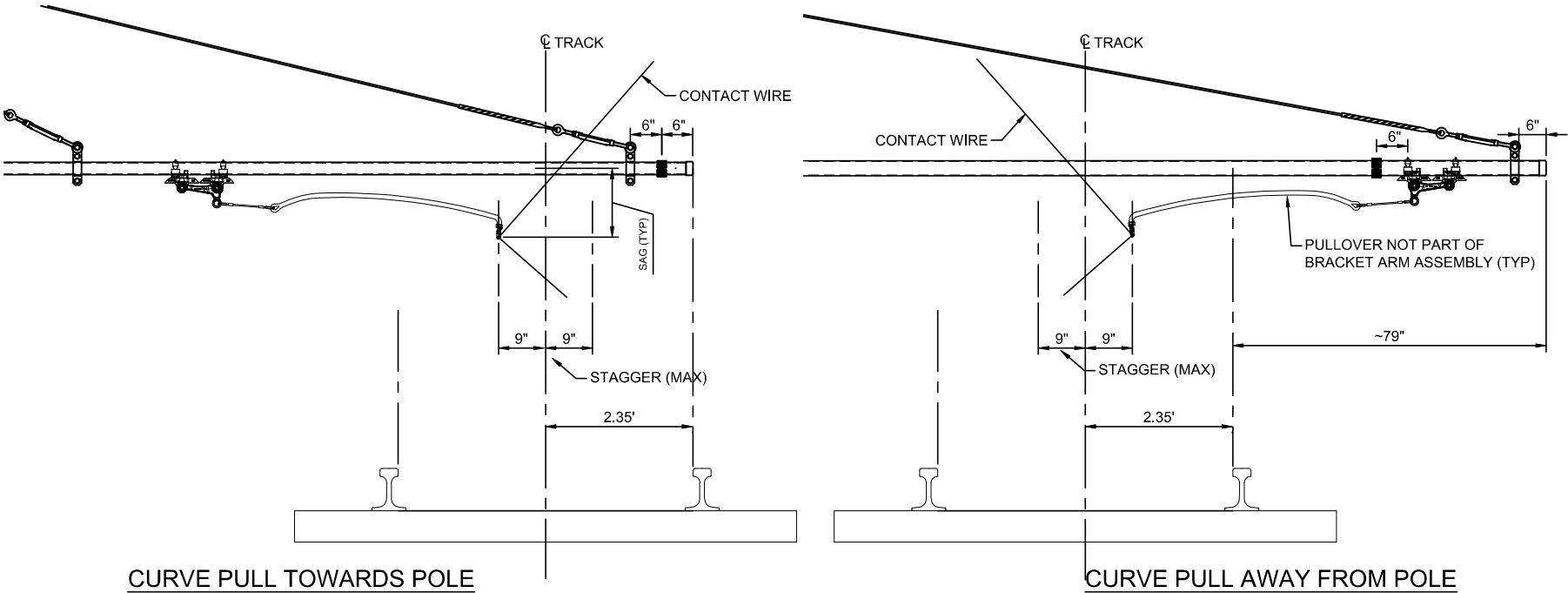
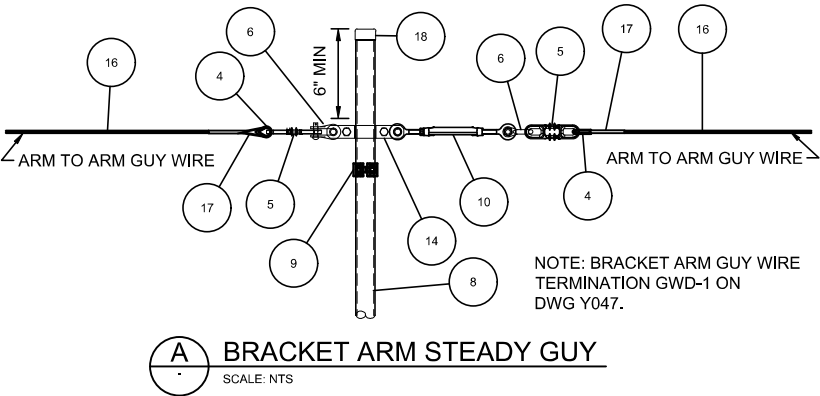
* ANCHOR BOLTS FOR FOUNDATIONS FD-1FE AND FD-2FE MUST CONFORM TO ASTM F1554, GRADE 105. THESE ANCHORS TO BE COLOR CODED IN THE ANCHOR ROD BODY, SUCH THAT THEY ARE DISTINGUISHABLE FROM ALL OTHER ANCHORS.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM STRUCTURAL DETAILS ANCHOR BOLT DETAIL	SCALE FOR 22"x34": AS SHOWN	
			CHECKED BY	BP									FILENAME: Y039.dwg	
			DRAWN BY	PFW									CONTRACT NO.: CONTRACT NO. ###	
			CHECKED BY	BP									VOLUME: 1	
			APPROVED BY	NKS									DRAWING NO.:	SHEET NO.:
PLOT DATE: 12/21/2022			1:36:04 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION				Y039		350	

- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G020. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G021. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G022.
 - CONTACT WIRE SUSPENSION ASSEMBLY ALLOCATED SEPARATELY AND INDICATED ON LAYOUT PLANS.
 - SIZE OF POLE CLAMP DEPENDANT UPON POLE SIZE.
 - BRACKET ARM GUY WIRE AT END OF ARM TO BE CLAMPED TO OCS POLE AT A MINIMUM 1:4 SLOPE.
 - USE INSIDE GUY WIRE WHEN BRACKET ARM PIPE IS GREATER THAN 12 FEET LONG.
 - FOR BRACKET ARMS UP TO 20 FEET LONG, USE 2 INCH SCHEDULE 80 PIPE (BA-1). FOR BRACKET ARMS BETWEEN THAN 20 FEET AND 25 FEET LONG USE 2-1/2 INCH SCHEDULE 80 PIPE (BA-1A).
 - CONTRACTOR TO FURNISH PIPE END CAP FOR APPROVAL BY KC STREETCAR. PIPE END CAP TO FIT OVER OUTSIDE OF PIPE AND BE SECURED USING A 1/4 INCH SQUARE HEAD SET SCREW.
 - CONTRACTOR SHALL ONLY USE HOT FORGE STEEL PIPE CLAMPS AND POLE CLAMPS.
 - MAXIMUM LENGTH OF BRACKET ARM BA-1A IS 25 FEET. FOR LENGTHS OVER 25 FEET, USE BA-2 ARM.
 - PULLOVER AND PENDULUM ASSEMBLIES ALLOCATED SEPARATELY.
 - BRACKET ARM LENGTHS DETERMINED BY CONTRACTOR.
 - MOUNTING HEIGHT OF BRACKET ARM TO COMPENSATE SAG OF CONTACT WIRE. CONTRACTOR TO DETERMINE FINAL HEIGHT.
 - ITEM NUMBERS 9, 11, AND 14 FOR BA-1A SHALL BE SIZED ACCORDINGLY.

BILL OF MATERIAL			
ITEM NO.	ITEM NO.	ITEM NO.	ITEM NO.
1	WIRE, SPAN, 5/16", EHS	ASTM A475	-
2	PREFORM, SPAN WIRE, 5/16"	PREFORM	GDE-2106
3	POLE CLAMP DETAILS	SEE DRAWING Y044	
4	THIMBLE, 5/16", STL HDG	MAC	E0492-01
5	LOOP INSULATOR	MAC	D4069-01
6	SHACKLE FOR LOOP INSULATOR	MAC	E0928-02
7	CHAIN LINK	MAC	E0159-01
8	PIPE, STEEL, 2 IN., HDG, SCHEDULE 80	ASTM A1085	-
9	PIPE CLEVIS TWO PIECE G2.0"	MAC	C0145-02
10	TURNBUCKLE, EYE & EYE	MAC	D0138-01
11	STRUT INSULATOR 2" SCHEDULE 80 PIPE	MAC	KMA-675
12	BRACKET ARM POLE SOCKET	SEE DRAWING Y045	
14	PIPE CLEVIS TWO PIECE G2.0"	MAC	V9350
16	WIRE, SPAN, 1/4", SIEMENS-MARTIN	ASTM A475	-
17	PREFORM, 1/4" SPAN WIRE	PREFORM	GDE-2104
18	PIPE END CAP*	-	-

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL WITH APPROVAL OF THE ENGINEER.

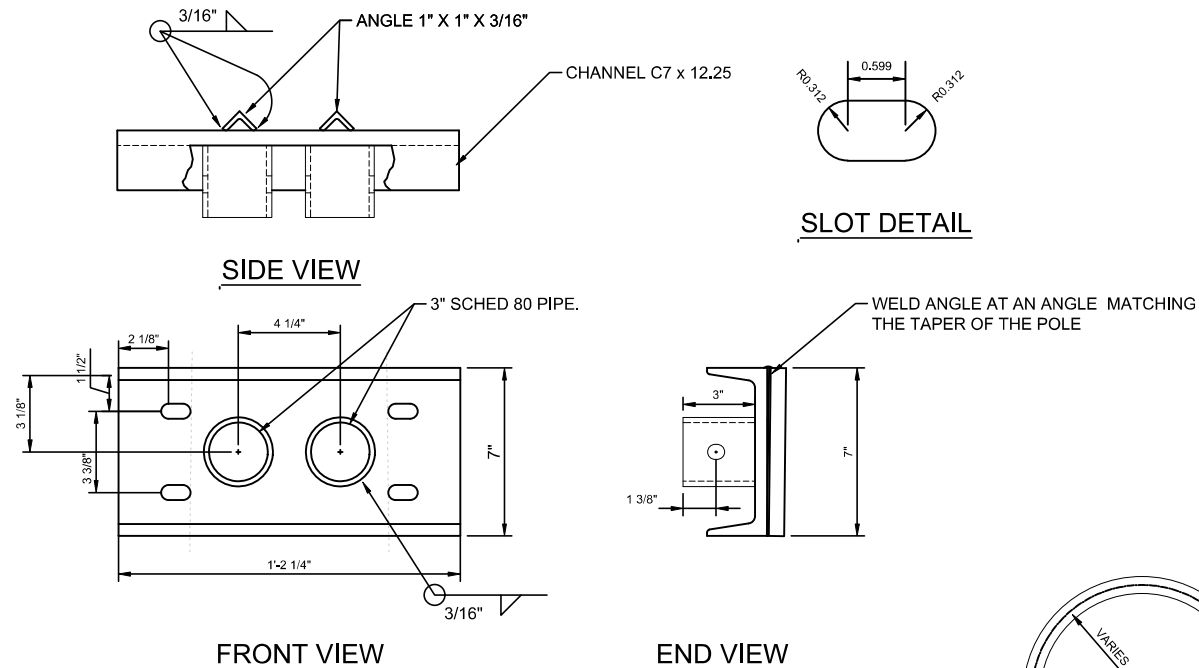


REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM BRACKET ARM ASSEMBLIES SINGLE PIPE BRACKET ARM	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Y041.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: SHEET NO.: Y041 351
			CHECKED BY	BP								
			DRAWN BY	PFW								
			CHECKED BY	BP								
			APPROVED BY	NKS								
PLOT DATE: 12/21/2022			1:38:01 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION					

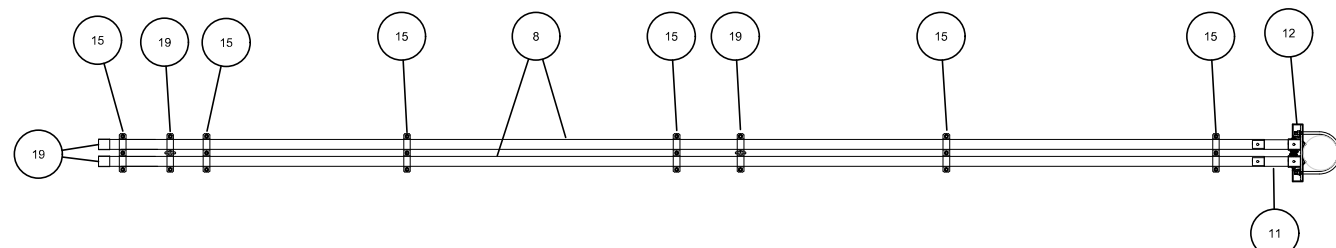
BILL OF MATERIALS			
ITEM NO.	DESCRIPTION	SUPPLIER	PART NUMBER
1	WIRE, SPAN, 5/16", EHS	ASTM A475	-
2	PREFORM, SPAN WIRE, 5/16"	PREFORM	GDE-2106
3	POLE CLAMP DETAILS	SEE DRAWING Y044	
4	THIMBLE, 5/16", STL HDG	MAC	E0492-01
5	LOOP INSULATOR	MAC	D4069-01
6	SHACKLE FOR LOOP INSULATOR	MAC	E0928-02
7	CHAIN LINK	MAC	E0159-01
8	PIPE, STEEL, 2-1/2 IN., HDG, SCHEDULE 80	-	-
9	NOT USED		
10	TURNBUCKLE, CLEVIS & EYE	MAC	D0138-01
11	STRUT INSULATOR 2-1/2" SCHEDULE 80 PIPE	MAC	KMA-675
12	PIPE SOCKET CHANNEL ASSEM	-	-
13	1/2" Ø CLEVIS PIN WITH COTTER KEY	-	-
14	EYE NUT, 5/8"	CHANCE	
15	PIPE CLEVIS TWO PIECE G2.5"	MAC	C0145-02*
16	WIRE, SPAN, 1/4"	-	-
17	PREFORM, 1/4"	PREFORM	GDE-2104
18	PIPE CLEVIS TWO PIECE WITH EYE G2.5"	SEE THIS DRAWING, DETAIL 2	
19	PIPE CAP	-	-

NOTE: PARTS LISTED ABOVE ARE FOR REFERENCE

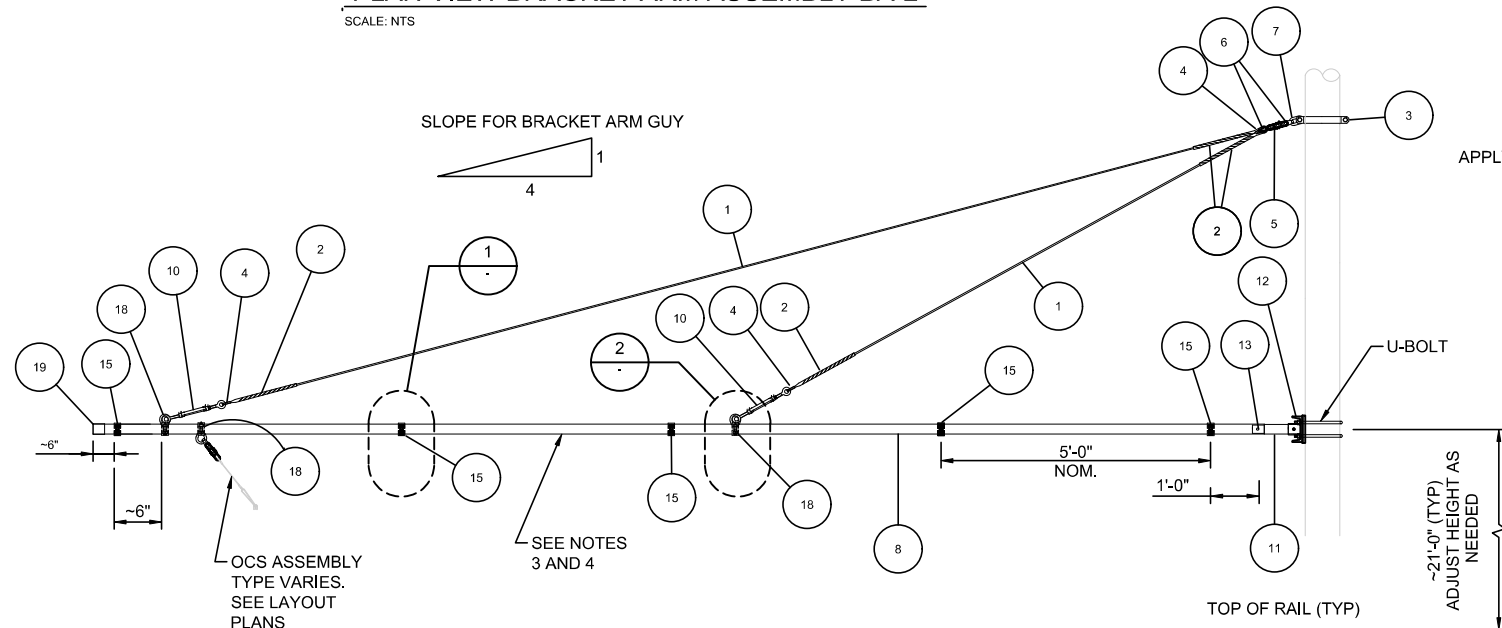
*PART TO BE MODIFIED AS SHOWN ON DRAWING DETAIL USING PART NO. C0245-01 FOR 2" SCHED 80 PIPE AS THE MODEL



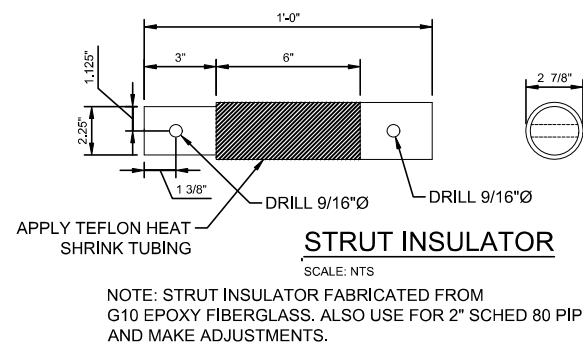
POLE BRACKET ASSEMBLY FOR BA-2



PLAN VIEW BRACKET ARM ASSEMBLY BA-2

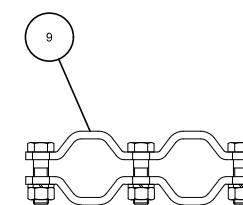


SIDE VIEW BRACKET ARM ASSEMBLY, BA-2, BA-2A
SCALE: NTS

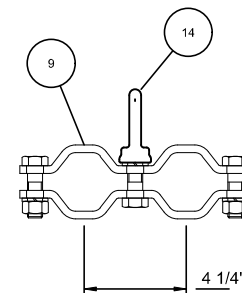


STRUT INSULATOR

SCALE: NTS

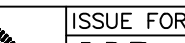


1 PIPE CLEVIS TWO PIECE
SCALE: 1" = 4"



2 PIPE CLEVIS TWO PIECE W/ EYE
SCALE: 1" = 4"

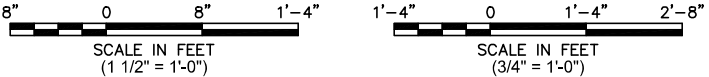
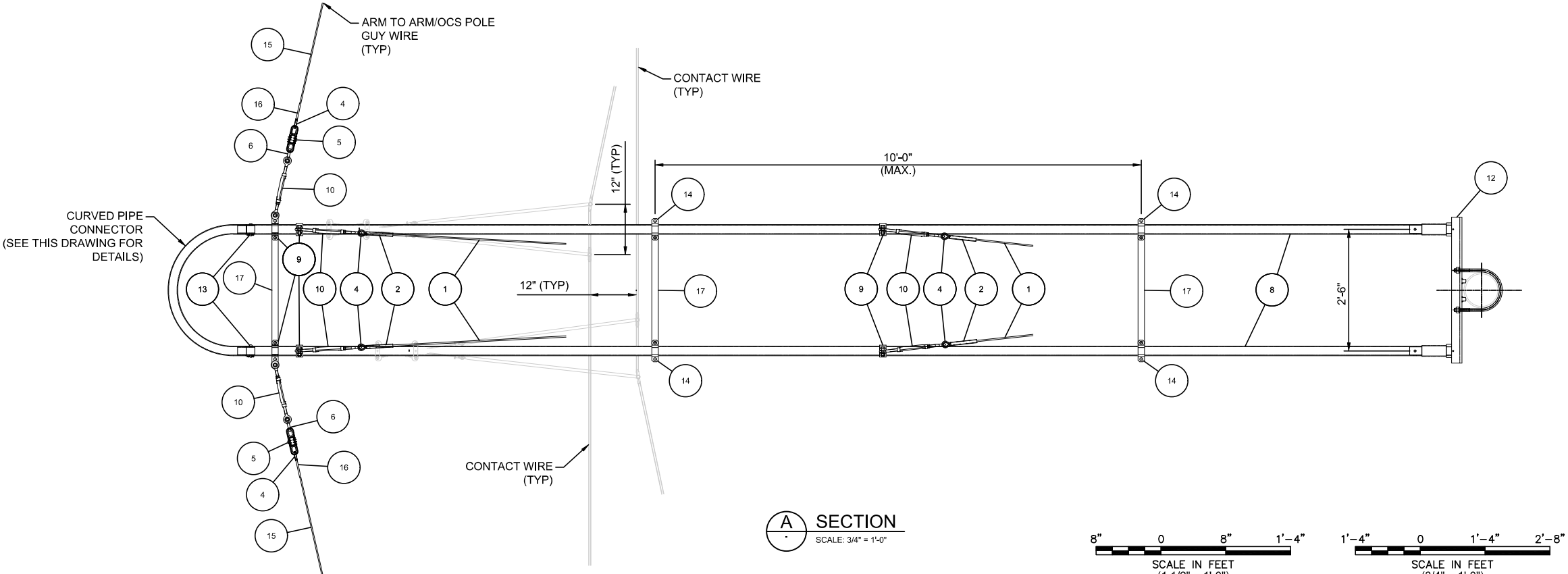
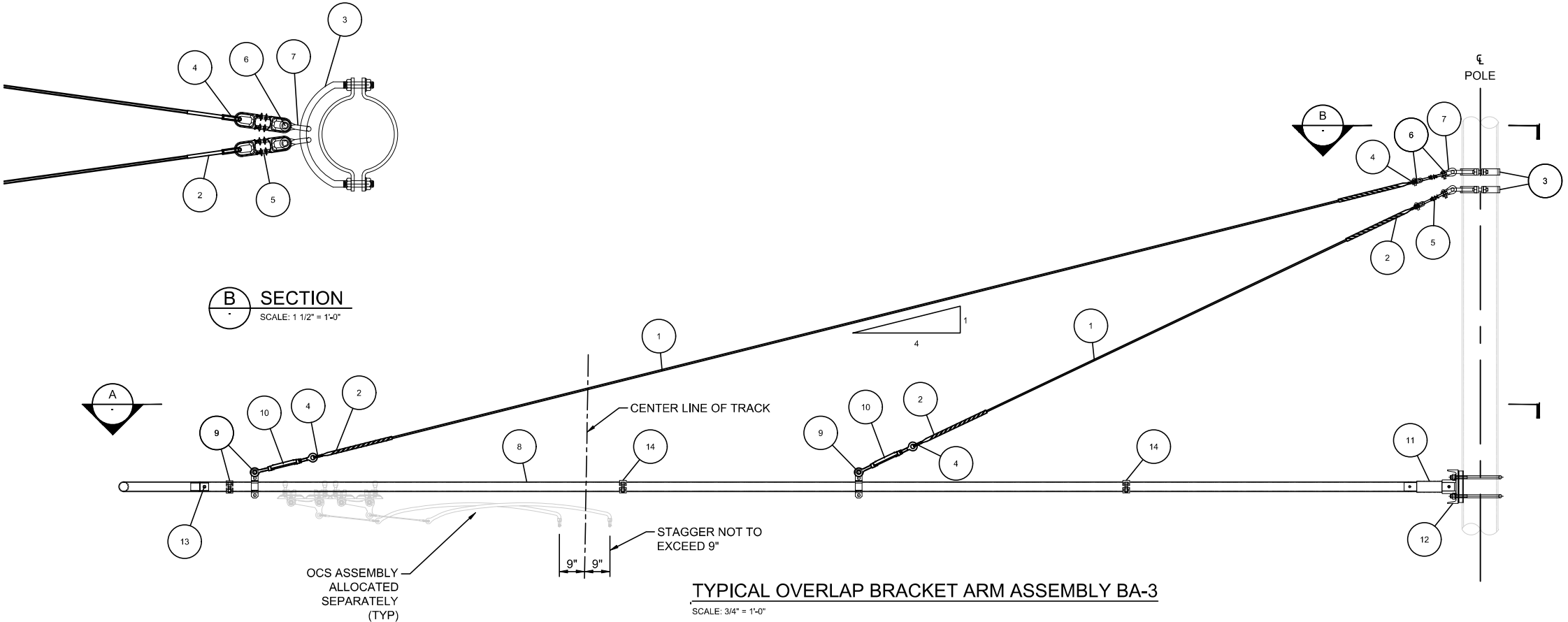
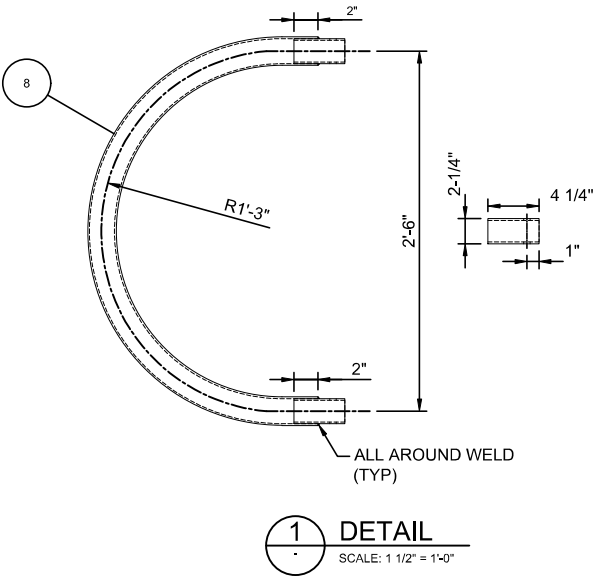
- ## NOTES:
1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 2. ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.
 3. BRACKET ARMS SHALL BE HORIZONTAL WITH RESPECT TO HORIZON.
 4. ASSEMBLY TYPE SUSPENDED FROM BRACKET ARM VARIES AND IS INDICATED ON LAYOUT PLANS.
 5. FOR BRACKET ARMS LESS THAN OR EQUAL TO 30 FEET IN LENGTH, USE 2 INCH SCHEDULE 80 PIPE (BA-2). FOR BRACKET ARMS BETWEEN 30 FEET AND 40 FEET IN LENGTH, USE 2-1/2" INCH SCHEDULE 80 PIPE (BA-2A). FINAL LENGTH OF BRACKET ARM TO BE DETERMINED IN THE FIELD ONCE THE OCS POLE HAS BEEN ERECTED USING THE CENTERLINE OF TRACK AS REFERENCE.
 6. MAXIMUM LENGTH OF BA-2A IS 40 FEET.
 7. ASSEMBLY 'BAG' INCLUDES A POLE CLAMP WHEN THE GUY WIRE TERMINATES AT A POLE.
 8. PIPE FITTINGS TO CONFORM TO THE APPROPRIATE SIZE PIPE.
 9. CONTRACTOR TO VERIFY ALL DIMENSIONS AND MAKE ADJUSTMENTS ACCORDINGLY TO ENSURE ALL ASSEMBLY COMPONENTS FIT PROPERLY.
 10. PIPE SIZE SHOWN IS 2-1/2" SCHED 80. FOR 2" SCHED 80, SIZE AND COMPONENTS SHALL BE ADJUSTED ACCORDINGLY DURING FABRICATION.
 11. U-BOLT TO FIT POLE SIZE IT IS BEING INSTALLED ON.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW		 BHANUVADAN K PARKHI - ENGINEER LICENSE NO. 2021046193	ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM BRACKET ARM ASSEMBLIES DOUBLE PIPE BRACKET ARM	SCALE FOR 22"x34": AS SHOWN
			CHECKED BY	BP			 HDR Engineering, Inc.	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS		FILENAME: Y042.dwg
			DRAWN BY	PFW			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270		CONTRACT NO.: CONTRACT NO. ###
			CHECKED BY	BP						VOLUME: 1
			APPROVED BY	NKS						DRAWING NO.: Y042
PLOT DATE: 12/21/2022			1:40:20 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION		SHEET NO.: 352	

BASIS OF DESIGN			
ITEM NO.	DESCRIPTION	SUPPLIER	PART NUMBER
1	WIRE, SPAN, 5/16", EHS	ASTM A475	-
2	PREFORM, END FITTING, 5/16"	PREFORM	GDE-2106
3	CLAMP FOR POLE, MULTIPLE SPAN	SEE DRAWING Y044	
4	THIMBLE, 5/16", STL HDG	MAC	KMA-140-4
5	LOOP INSULATOR	MAC	D2864-01
6	SHACKLE FOR LOOP INSULATOR	MAC	KMA-010-3
7	SHACKLE	MAC	D0231-01
8	PIPE, STEEL, 2-1/2 IN., HDG, SCHEDULE 80	-	-
9	PIPE CLAMP FOR 2" PIPE, SINGLE CLEVIS	MAC	C0145-03
10	TURNBUCKLE, EYE & EYE	MAC	D0138-01
11	STRUT INSULATOR 2-1/2" SCHEDULE 80 PIPE	MAC	KMA-675
12	MOUNTING BRACKET	SEE DRAWING Y046	
13	1/2" Ø CLEVIS PIN WITH COTTER KEY	-	-
14	PIPE CLAMP FOR 2" PIPE	MAC	C-2055-03
15	WIRE, SPAN, 1/4"	-	-
16	PREFORM, 1/4" SPAN WIRE	PREFORM	GDE-2104
17	STEEL STRAP, 1/2" THICK BY 1 5/8" WIDE	-	-

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL AS APPROVED BY THE ENGINEER..

- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.
 - BRACKET ARMS SHALL BE HORIZONTAL WITH RESPECT TO HORIZON.
 - ASSEMBLY TYPE SUSPENDED FROM BRACKET ARM VARIES AND IS INDICATED ON LAYOUT PLANS.
 - MAXIMUM LENGTH OF BRACKET ARM TO START OF CURVE PIPES IS 30 FEET.



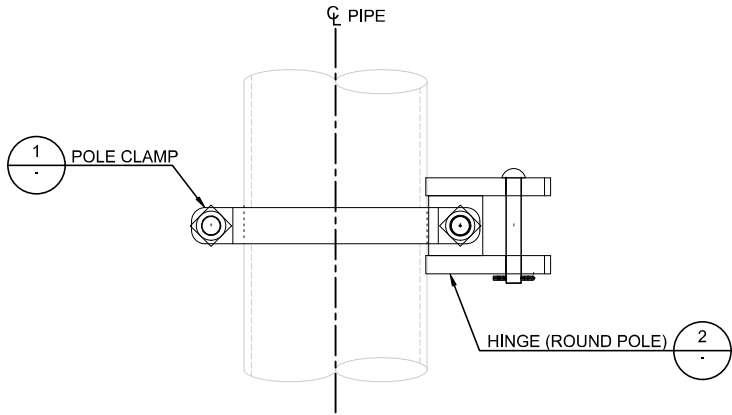
REV	DATE	DESCRIPTION

DESIGNED BY	PFW
CHECKED BY	BP
DRAWN BY	PFW
CHECKED BY	BP
APPROVED BY	NKS

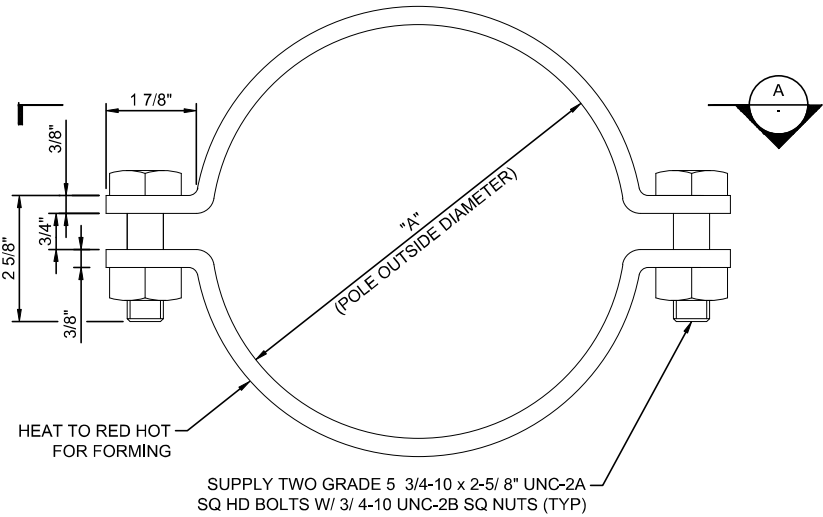


ISSUE FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
OVERHEAD CONTACT SYSTEM BRACKET ARM ASSEMBLIES OVERLAP SINGLE PIPE BRACKET ARM	
SCALE FOR 22"x34": AS SHOWN FILENAME: Y043.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: Y043	SHEET NO.: 353



4 DETAIL - HINGE MOUNTING ON POLE
SCALE: 3" = 1'-0"



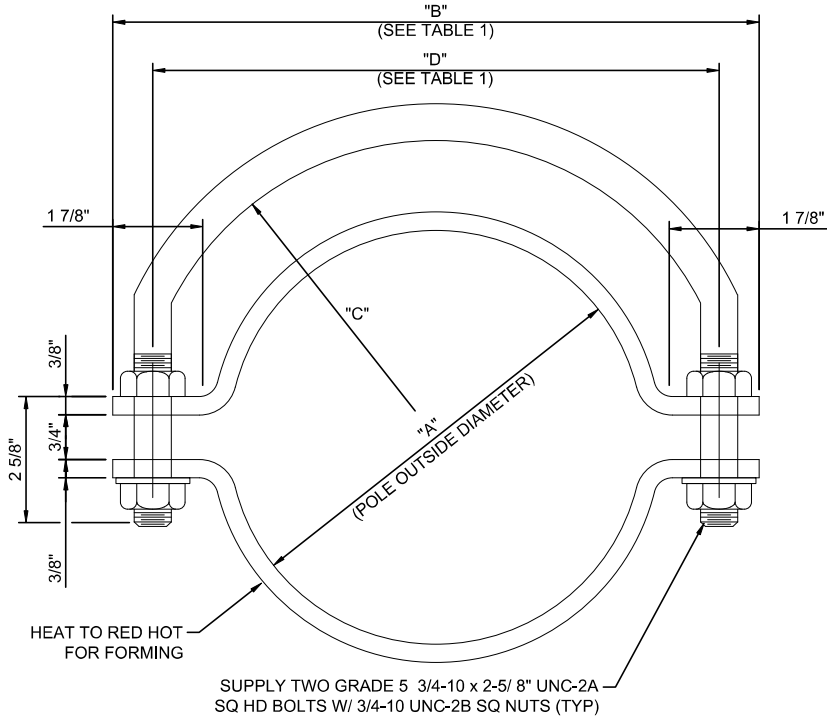
MAXIMUM LOAD ON BOLT NOT TO EXCEED 7,000 LBS.

1 DETAIL - POLE CLAMP
SCALE: 6" = 1'-0"

NOTES:

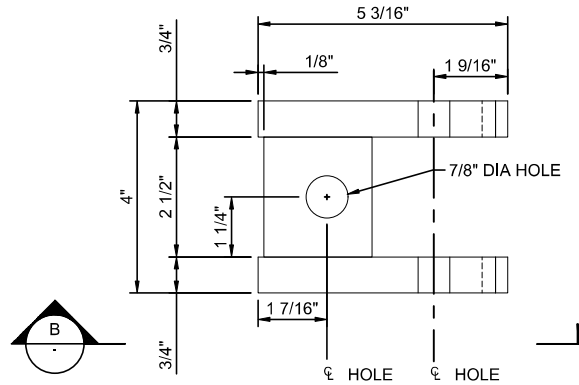
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- BEAM CLAMP ROD TO BE STEEL, ASTM A572, GRADE 65 HOT FORGED FOR BENDING. CLAMPS SHALL BE CAST STEEL PER ASTM A216. PARTS SHALL BE HOT DIPPED GALVANIZED PER ASTM A153 FOR ROD AND ASTM A385.
- NUTS SHALL BE HEAVY HEX HEAD, CONFORMING TO ASTM A385 AND HOT DIPPED GALVANIZED PER ASTM A15 FOR ROD.
- BOLTS AND NUTS TO BE GRADE 5, HOT DIP GALVANIZED TO ASTM A153, CLASS C.
- USE HINGE MOUNTING FOR BRACKET ARMS BEING MODIFIED OR INSTALLED AT POLES ON THE STARTER SYSTEM WHERE THE ARM NEEDS TO HAVE AN ALONG TRACK MOVEMENT.

TABLE 1				
SIZE	"A"	"B"	"C"	"D"
1	3-1/2"	8"	3-1/8"	6-3/8"
2	4-1/2"	9"	3-5/8"	7-3/8"
3	5-9/16"	10-1/16"	4-5/32"	8-7/16"
4	6-5/8"	11-1/8"	4-11/16"	9-1/2"
5	7-5/8"	12-1/8"	5-3/16"	10-1/2"
6	8-5/8"	13-1/8"	5-11/16"	11-1/2"
7	9-5/8"	14-1/8"	6-3/16"	12-1/2"
8	10-3/4"	15-1/4"	6-3/4"	13-5/8"
9	11-3/4"	16-1/4"	7-1/4"	14-5/8"

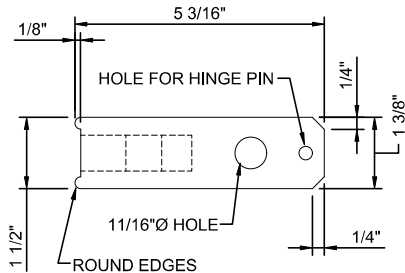


MAXIMUM LOAD ON BOLT NOT TO EXCEED 7,000 LBS.

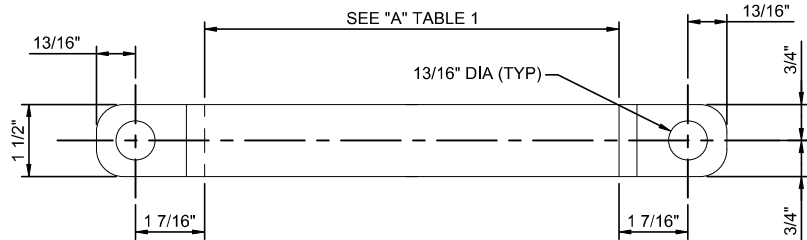
3 DETAIL - MULTIPLE POLE CLAMP
SCALE: 6" = 1'-0"



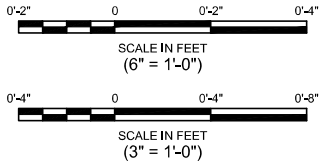
2 DETAIL - HINGE (ROUND POLE)
SCALE: 6" = 1'-0"



B PLAN VIEW
SCALE: 6" = 1'-0"



A SECTION
SCALE: 6" = 1'-0"



REV	DATE	DESCRIPTION	DESIGNED BY	PFW
			CHECKED BY	BP
			DRAWN BY	PFW
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			1:41:51 PM	
			DATE	12/23/2022



ISSUE FOR BID



HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

DATE: 12-23-2022



The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

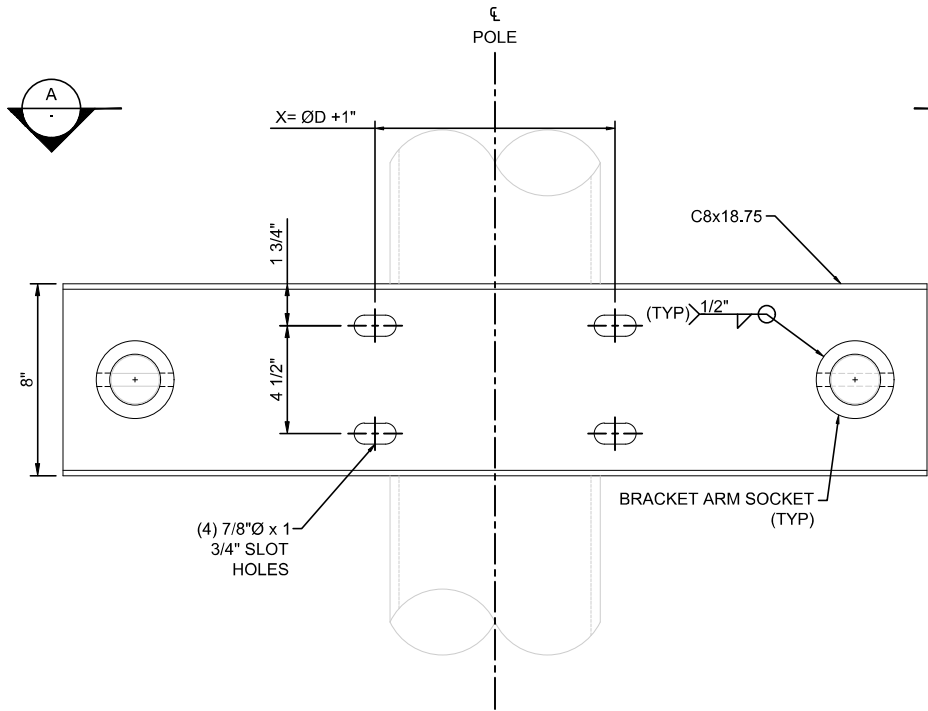
OVERHEAD CONTACT SYSTEM
BRACKET ARM ASSEMBLIES
POLE CLAMP DETAILS

SCALE FOR 22"x34":
AS SHOWN
FILENAME:
Y044.dwg
CONTRACT NO.:
CONTRACT NO. ###
VOLUME:
1
DRAWING NO.:
Y044
SHEET NO.:
354

303186

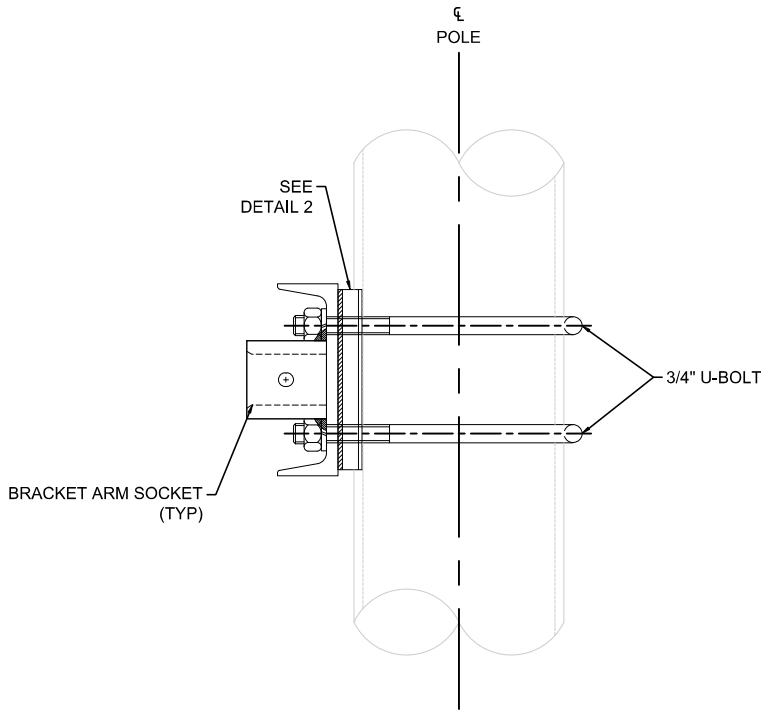
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032..
- BOLTS AND CLEVIS PINS SHALL BE STEEL CONFORMING TO ASTM A325, TYPE 1, AND GALVANIZED IN CONFORMANCE WITH ASTM A153, CLASS C.
- NUTS SHALL BE STEEL CONFORMING TO ASTM A563, GRADE DH, AND GALVANIZED IN CONFORMANCE WITH ASTM 153, CLASS C.
- WASHERS SHALL BE FLAT AND GALVANIZED HARDENED STEEL FOR USE WITH FASTENERS TO ASTM A325.
- POLE SOCKET TO HAVE 2-1/2" SCHEDULE 80 PIPE INSERTED INTO IT.
- FOR LOCATION OF DOUBLE BRACKET ARMS REFER TO LAYOUT PLANS.
- DOUBLE BRACKET BEAM USED FOR OVERLAPS.



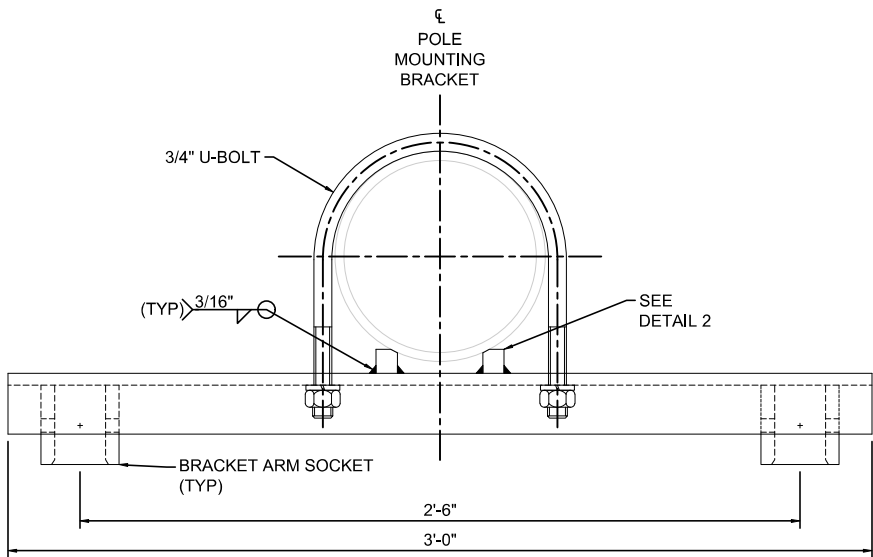
DOUBLE BRACKET ARM MOUNTING BRACKET

SCALE: 3" = 1'-0"



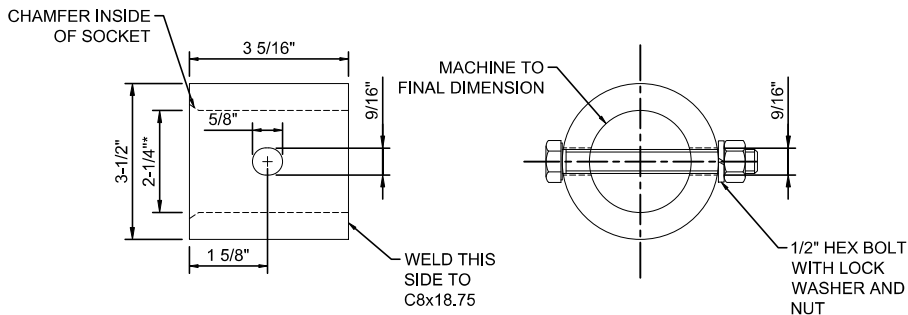
B VIEW

SCALE: 3" = 1'-0"



A VIEW

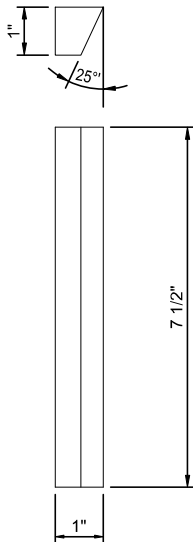
SCALE: 3" = 1'-0"



1 BRACKET ARM SOCKET DETAIL

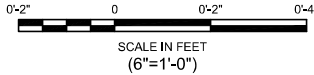
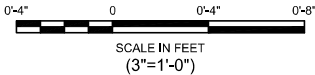
SCALE: 6" = 1'-0"

*VERIFY DIMENSION FOR ACCOMMODATING GALVANIZED FINISH ON SOCKET AND PIPE

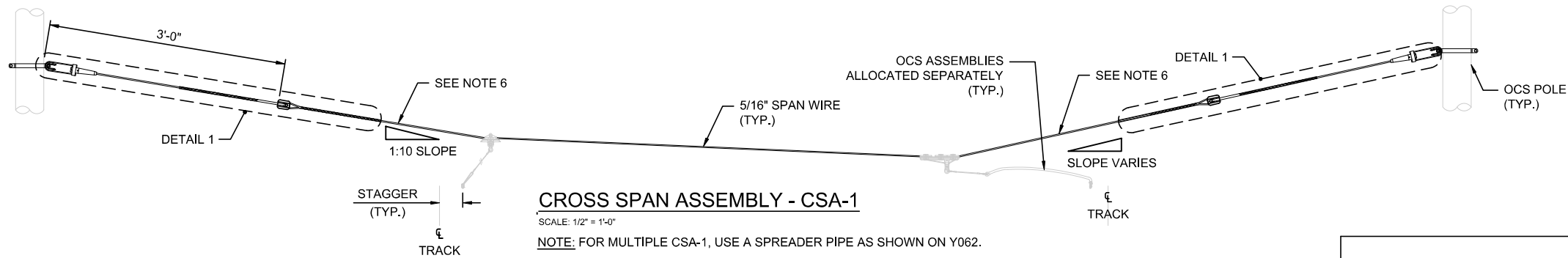


2 DETAIL

SCALE: 6" = 1'-0"



REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": AS SHOWN FILENAME: Y046.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: SHEET NO.: Y046 356
			CHECKED BY	BP							
			DRAWN BY	PFW							
			CHECKED BY	BP							
			APPROVED BY	NKS							
PLOT DATE: 12/21/2022			1:45:17 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION		OVERHEAD CONTACT SYSTEM BRACKET ARM ASSEMBLIES OVERLAP BRACKET ARM MOUNTING BRACKET DETAIL		



CROSS SPAN ASSEMBLY - CSA-1

SCALE: 1/2" = 1'-0"

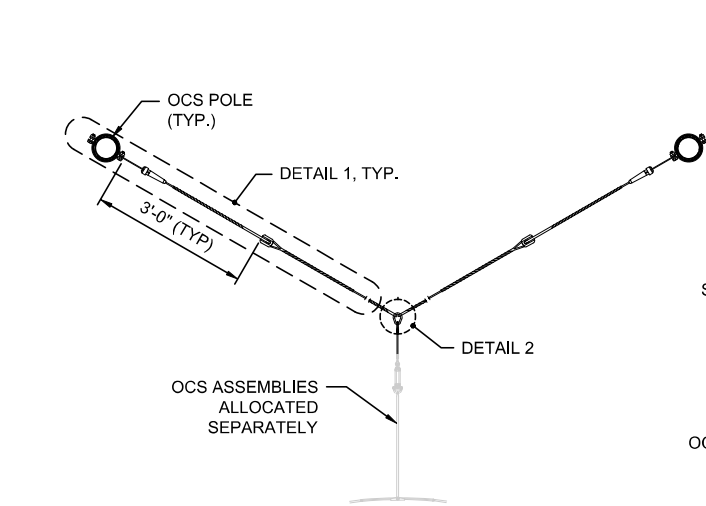
NOTE: FOR MULTIPLE CSA-1, USE A SPREADER PIPE AS SHOWN ON Y062.

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- REFER TO LAYOUT PLANS FOR CROSS SPAN LOCATIONS.
- CONTRACTOR TO DETERMINE CORRECT POLE CLAMP SIZE.
- IF INADEQUATE SPACE PREVENTS USE OF PREFORMED END FITTING USE STRANDWISE CONNECTION.
- IF CRIMP SLEEVE IS USED FOR FORMING A LOOP WITH SPAN WIRE, FORM THE LOOP WITH A SPECIAL TOOL FOR FORMING, MAC PRODUCTS WD1868-01 AND APPLY COMPRESSION SLEEVE.
- CROSS SPAN WIRE SLOPE SHALL BE A MAXIMUM OF 1:10 FOR POLE INSIDE OF CURVE. SLOPE AT THE OPPOSITE END OF CROSS SPAN WIRE WILL VARY.

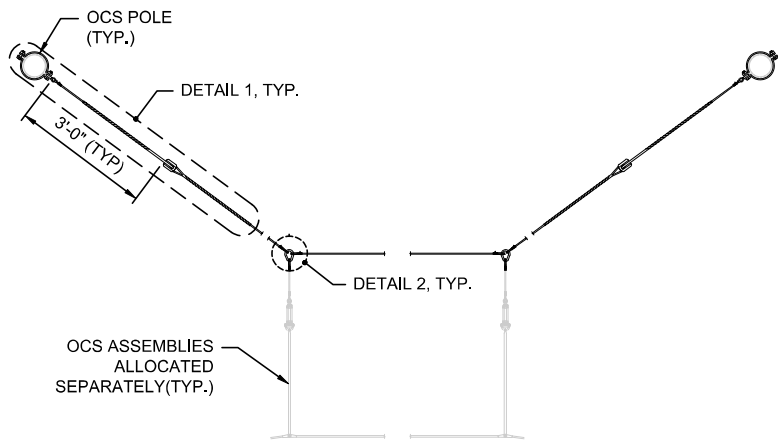
BASIS OF DESIGN										
ITEM	QTY.							DESCRIPTION	SUPPLIER	PART NO.
	KSR-1	CSA-1	VSA-1	VSA-2	VSA-3	BBA-1	BBA-2			
1	-	A/R	A/R	A/R	A/R	A/R	A/R	STEEL SPAN WIRE, 5/16"	ASTM A475	-
2	-	-	1	1	2	2	4	1/2" WELDLESS SLING LINK	CROSBY	1013913
3	-	-	3	3	6	6	12	THIMBLE, 5/16"	CROSBY	1037559
4	A/R	-	-	-	-	-	-	SPAN ROPE, KEVLAR 11MM	PHILYSTRAN	HPTG 11200I
7	-	2	2	3	4	2	4	THIMBLE	CROSBY	1037559
8	-	2	2	3	4	2	4	POLE CLAMP	-	SEE DWG. Y044
9	-	4	4	6	8	4	8	PREFORM BIG-GRIP-5/16"	PREFORMED LINE PRODUCTS	GDE-2106
10	-	2	2	3	4	2	4	JB PORCELAIN INSULATOR	MACLEAN	DP54-3
11	-	2	2	3	4	2	4	STRANDWISE, 5/16"	MACLEAN	5251
12	-	-	-	-	-	-	-	-	-	-
13	-	-	-	-	-	-	-	—	—	—
15	-	-	-	-	-	-	-	EYE PLATE FOR BUILDING	MAC	E1234-01
16	-	-	-	-	-	-	-	END TERMINATION, 11MMØ KEVLAR	PHILLYSTRAN	ESA 5112

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



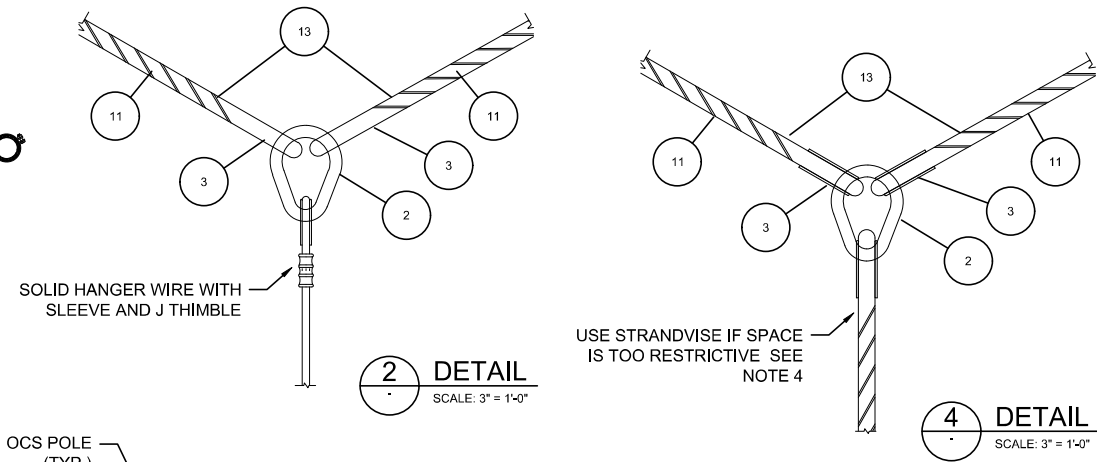
VEE SPAN ASSEMBLY - VSA-1

SCALE: 3/8" = 1'-0"



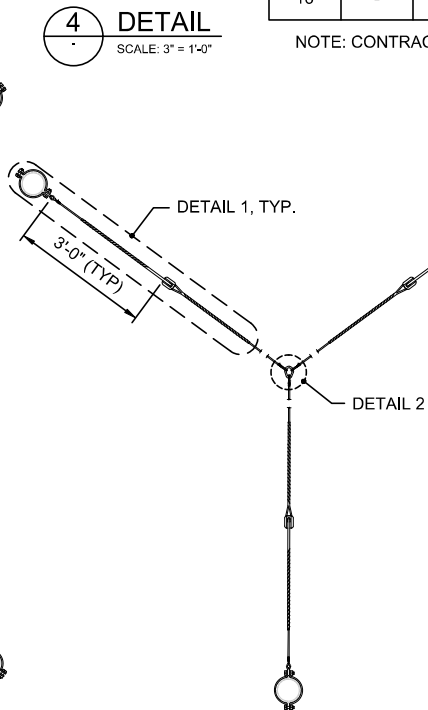
BACKBONE ASSEMBLY - BBA-1

SCALE: 3/8" = 1'-0"



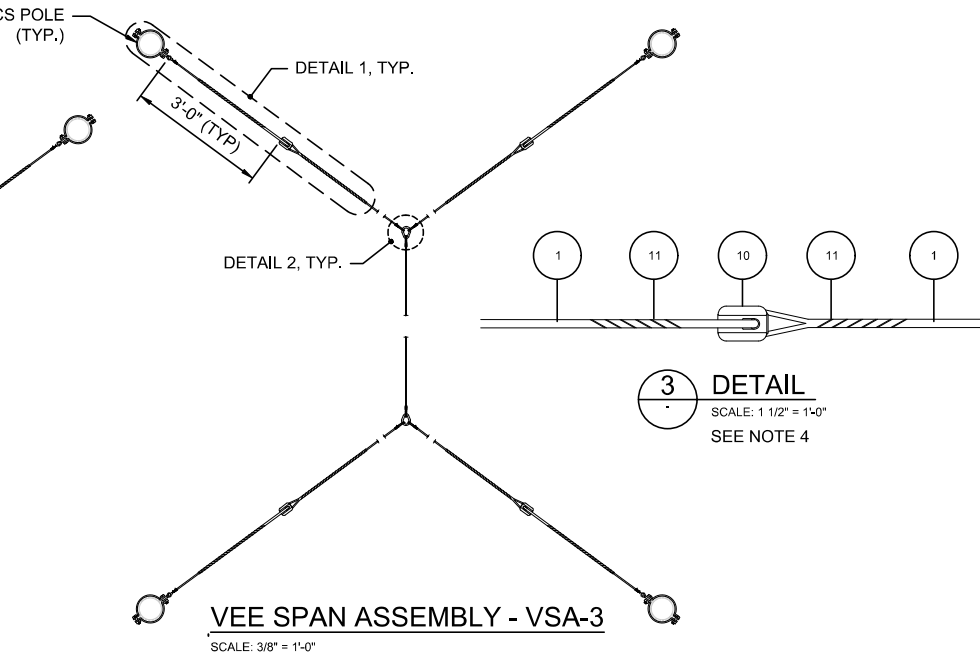
BACKBONE ASSEMBLY - BBA-2

SCALE: 3/8" = 1'-0"



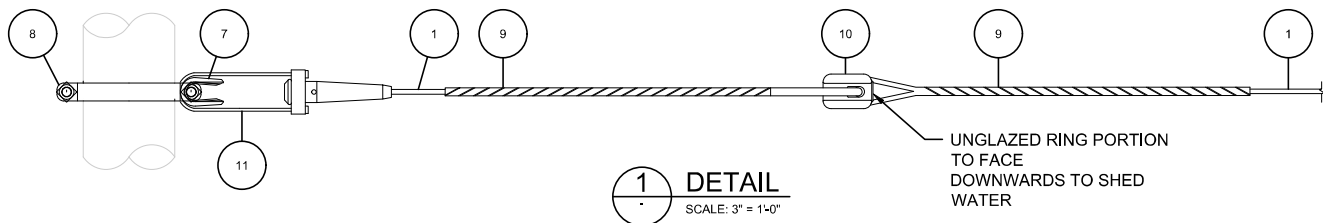
VEE SPAN ASSEMBLY - VSA-2

SCALE: 3/8" = 1'-0"



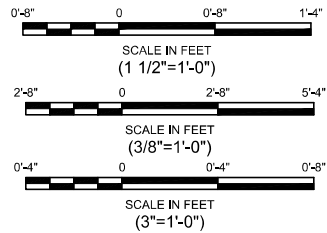
VEE SPAN ASSEMBLY - VSA-3

SCALE: 3/8" = 1'-0"



1 DETAIL

SCALE: 3" = 1'-0"



REV	DATE	DESCRIPTION	DESIGNED BY	PFW
			CHECKED BY	BP
			DRAWN BY	PFW
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022

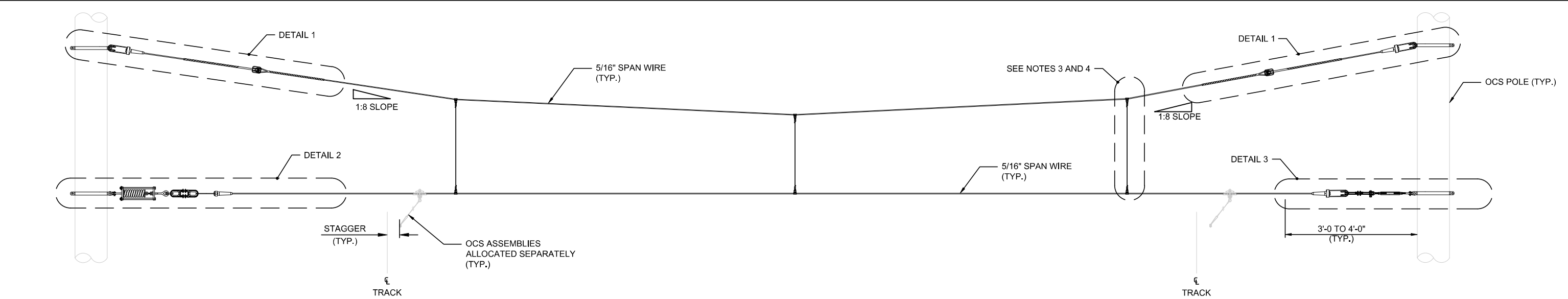


ISSUE FOR BID		DATE: 12-23-2022	
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	
NOT FOR CONSTRUCTION			

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

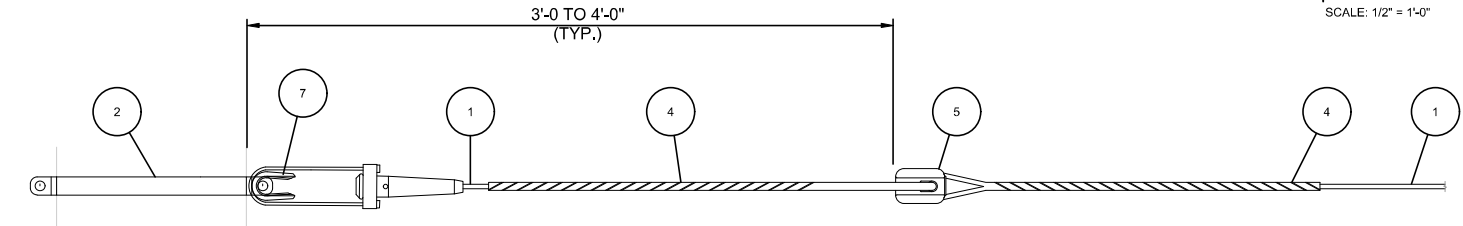
OVERHEAD CONTACT SYSTEM
SPAN WIRE ARRANGEMENTS
CROSS SPAN DETAILS

SCALE FOR 22"x34": AS SHOWN	
FILENAME: Y051.dwg	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y051	SHEET NO.: 358



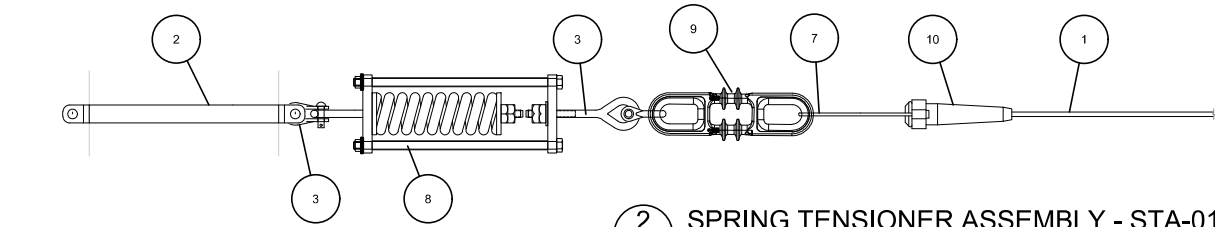
HEAD SPAN ASSEMBLY - HSA-1

SCALE: 1/2" = 1'-0"



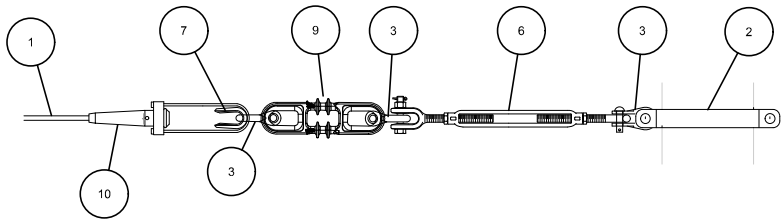
1 TAIL PIECE ASSEMBLY - TP-01

SCALE: 1 1/2" = 1'-0"



2 SPRING TENSIONER ASSEMBLY - STA-01

SCALE: 1 1/2" = 1'-0"



3 TAIL PIECE ASSEMBLY - TP-03

SCALE: 1 1/2" = 1'-0"

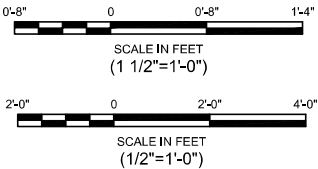
NOTE: TO BE USED IN LIEU OF DETAIL 1 WHERE A MINIMUM 3'-0" CLEARANCE FROM FACE OF POLE TO INSULATOR CANNOT BE ACHIEVED

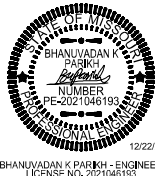
BASIS OF DESIGN			
ITEM	DESCRIPTION	SUPPLIER	PART NO.
1	STEEL SPAN WIRE, 5/16", UTILITIES GRADE	ASTM A475	-
2	POLE CLAMP	MAC	SEE DWG. Y044
3	SHACKLE, TYPE 2	MAC	D0231-02
4	PREFORMED BIG-GRIP-5/16"	PREFORMED LINE PRODUCTS	GDE-2106
5	JB PORCELAIN INSULATOR	MACLEAN	DP54-3
6	HG-227 JAW & EYE TURNBUCKLE	CROSBY	1031975
7	THIMBLE, 5/16"	CROSBY	1037559
8	SPRING, CROSS SPAN	SIEMENS	8WL1080
9	INSULATOR, LOOP	MAC	D2864-01
10	STRANDWISE, 5/16"	MACLEAN	5201

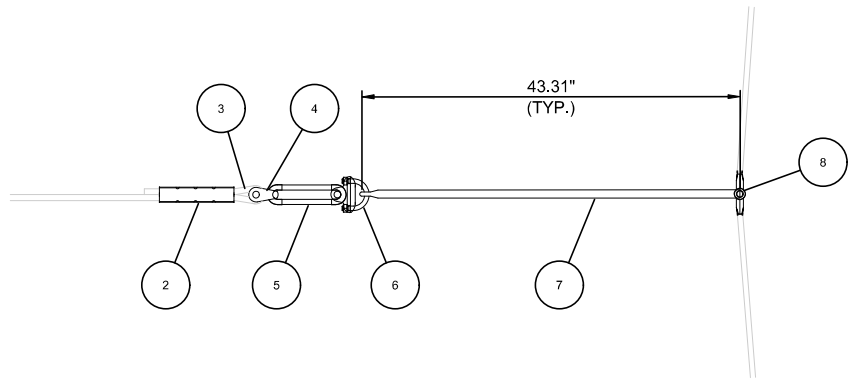
NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.

NOTES:

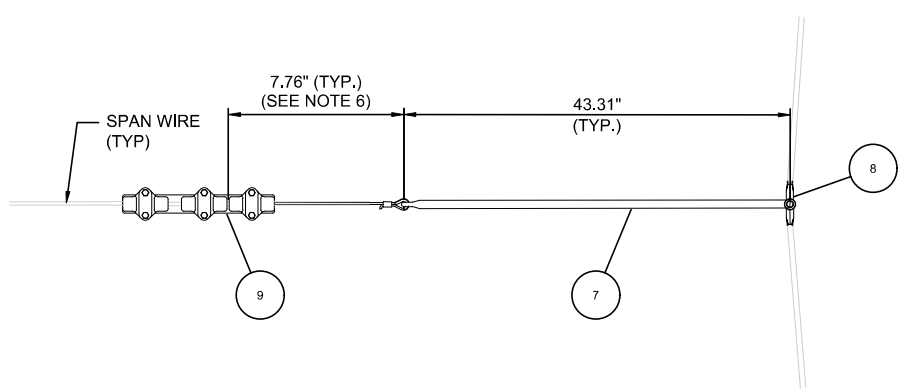
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- INSTALL SPRING ON INSIDE OF CURVE PULL. TENSION SPAN WIRE TO 1,000 LBS. AT 60° F.
- HEAD SPANS TO BE USED FOR MULTIPLE TRACKS OR LOCATIONS REQUIRING ADDITIONAL SUPPORT FOR THE CROSS SPAN WIRE.
- FOR HEAD SPAN HANGER ASSEMBLY DETAIL, REFER TO DRAWING Y059.



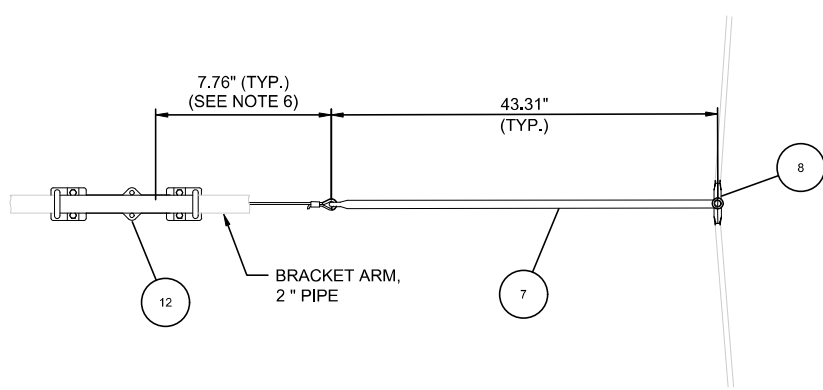
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM SPAN WIRE ARRANGEMENTS HEADSPAN ASSEMBLY	SCALE FOR 22"x34": AS SHOWN		
			CHECKED BY	BP									FILENAME:	Y052.dwg	
			DRAWN BY	PFW									CONTRACT NO.:		
			CHECKED BY	BP									CONTRACT NO. ###		
			APPROVED BY	NKS									VOLUME:	1	
PLOT DATE: 12/21/2022			1:51:18 PM			DATE	12/23/2022	NOT FOR CONSTRUCTION				DRAWING NO.:	Y052	SHEET NO.:	359



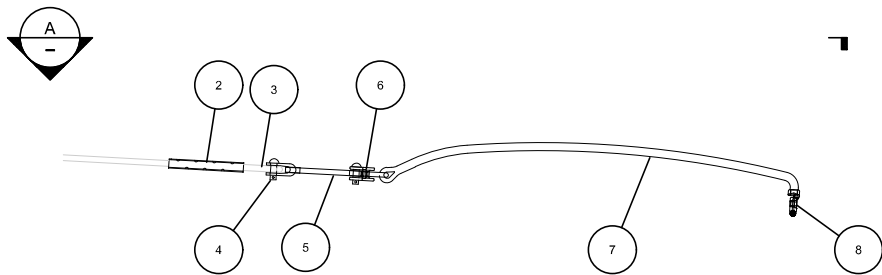
A PLAN VIEW
SCALE: NTS



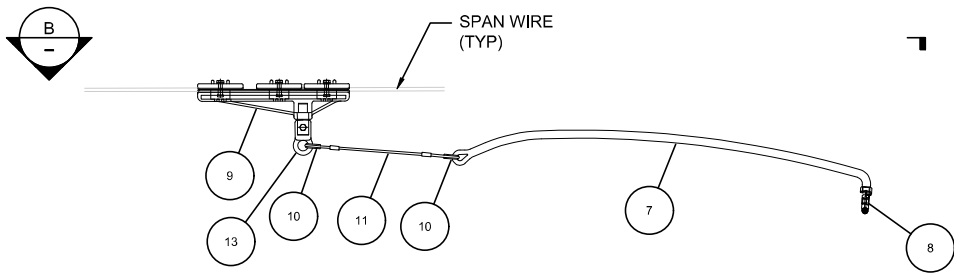
B PLAN VIEW
SCALE: NTS



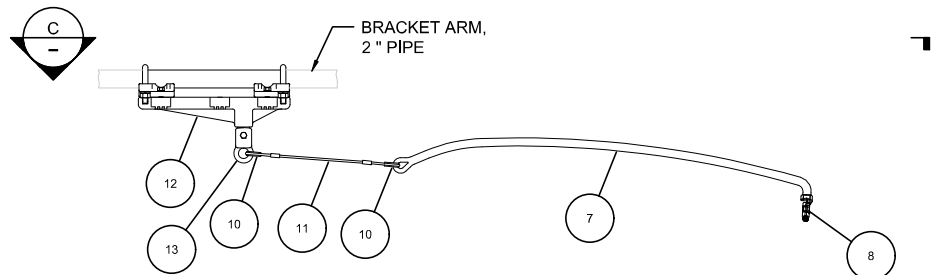
C PLAN VIEW
SCALE: NTS



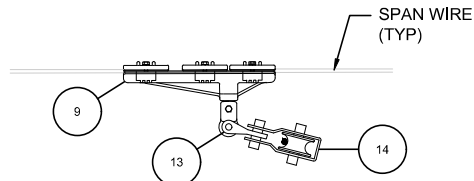
**FPO-1
FLYING PULLOVER**
SCALE: NTS
(LINE ANGLE < 8°)
ASSEMBLY WEIGHT: 6.895 LBS



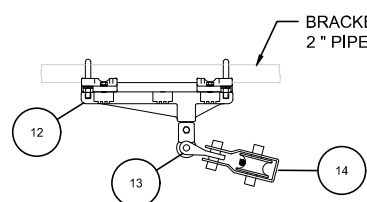
**PO-1
PULLOVER**
SCALE: NTS
(LINE ANGLE < 8°)
ASSEMBLY WEIGHT: 15.406 LBS



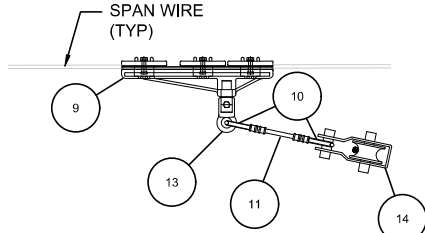
**PO-1A
PULLOVER**
SCALE: NTS
(LINE ANGLE < 8°)
ASSEMBLY WEIGHT: 11.501 LBS



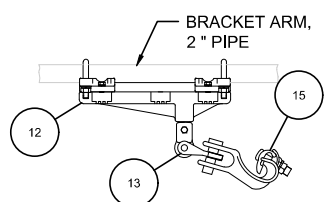
**CWP-1
CONTACT WIRE PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 4.908 LBS



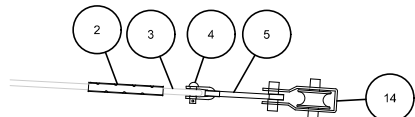
**CWP-1A
CONTACT WIRE PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 6.892 LBS



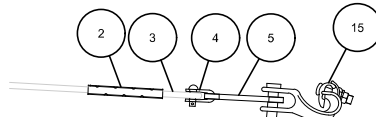
**CWP-1B
CONTACT WIRE PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 4.788 LBS



**CWP-1C
CONTACT WIRE PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 6.892 LBS



**CWP-2
CONTACT WIRE FLYING
PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 1.571 LBS



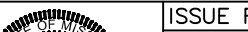
**CWP-3
CONTACT WIRE FLYING
PULLOVER**
SCALE: NTS
ASSEMBLY WEIGHT: 2.191 LBS

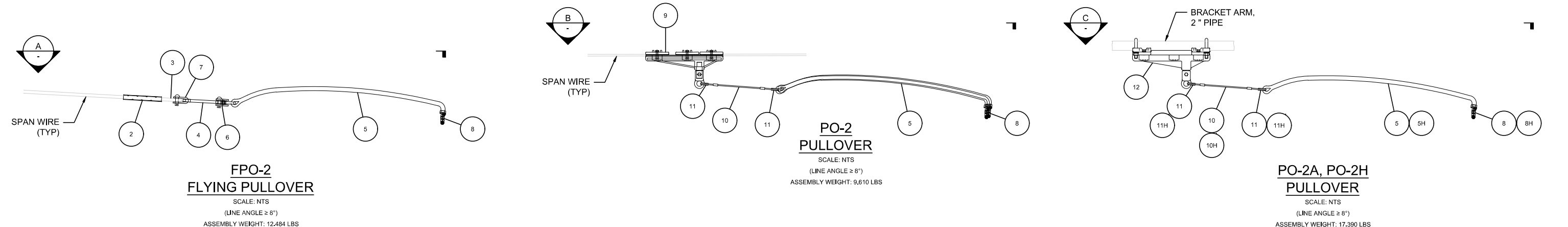
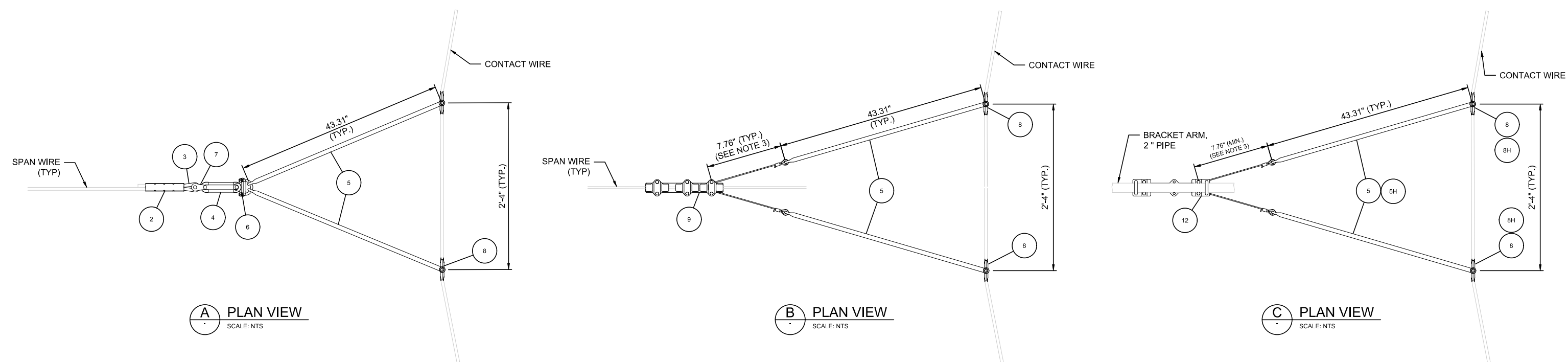
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- GUY WIRE LENGTH FOR FLYING PULLOVERS MAY VARY. USE OF 4 mm HANGER WIRE FOR SHORT RUNS MAY BE SUBSTITUTED. IF LENGTH IS 3 FEET OR LESS.
- USE SPAN SPACER TO PREVENT FOULING AT SPAN WIRE FOR FLOATING PULLOVER, SEE DRAWING Y064 FOR DETAILS.
- WHEN CONNECTING TO CANTILEVER PIPE, SUBSTITUTE LINE INSULATOR, ITEM 9, WITH G2 SYNTHETIC FOR PIPE, ITEM 12, AS SHOWN ON THIS DRAWING.
- MAXIMUM LOADING ON SINGLE PULLOVER IS 450 LBS. PULLOVER RODS TO BE ONE PIECE UNITS HOT FORGED AND FORMED.
- HANGER WIRE, ITEM 11 FOR ASSEMBLY PO-1 AND PO-1A, LENGTHS IS TYPICALLY 7.76". LENGTH MAY BE INCREASED TO SUIT CONDITIONS. MAXIMUM LENGTH IS 15 3/4".

BASIS OF DESIGN											
ITEM	QTY.								DESCRIPTION	SUPPLIER	PART NO.
	FPO-1	PO-1	PO-1A	CWP-1	CWP-1 A	CWP-1 B	CWP-2	CWP-3			
2	1	-	-	-	-	-	1	1	TERMINATION, SPAN WIRE 5/16"	MAC	E0493-01
3	1	-	-	-	-	-	1	1	THIMBLE OPEN PATTERN, 5/16" G-408	CROSBY	1037559
4	1	-	-	-	-	-	1	1	SHACKLE FOR LOOP INSULATOR	MAC	E0928-02
5	1	-	-	-	-	-	1	1	LOOP INSULATOR	MAC	D2864-01
6	1	-	-	-	-	-	-	-	CONNECTION FORK W/ U-BOLT	MAC	E1225-01
7	1	1	1	-	-	-	-	-	STEADY ARM ROD, 3.61 FT	MAC	C1813-07
8	1	1	1	-	-	-	-	-	CLAMP, CONTACT WIRE	MAC	B0348-01
9	-	1	-	1	-	1	-	-	LINE INSULATOR, G2 SYNTHETIC	MAC	C1673-01
10	-	2	2	-	-	2	-	-	THIMBLE, J SYNTHETIC	MAC	D0719-01
11	-	1	1	-	-	1	-	-	HANGER WIRE WITH TWO LOOP, 7.76" LONG	MAC	D1340-04
12	-	-	1	-	1	-	-	-	G2 SYNTHETIC, FOR PIPE	MAC	C1685-05
13	-	1	1	1	1	1	-	-	CLEVIS TONGUE	MAC	E0112-01
14	-	-	-	1	1	1	1	-	PULLEY	MAC	300221
15	-	-	-	-	-	-	-	1	SUSPENSION ANGLE CLAMP	MAC	95-LC1057

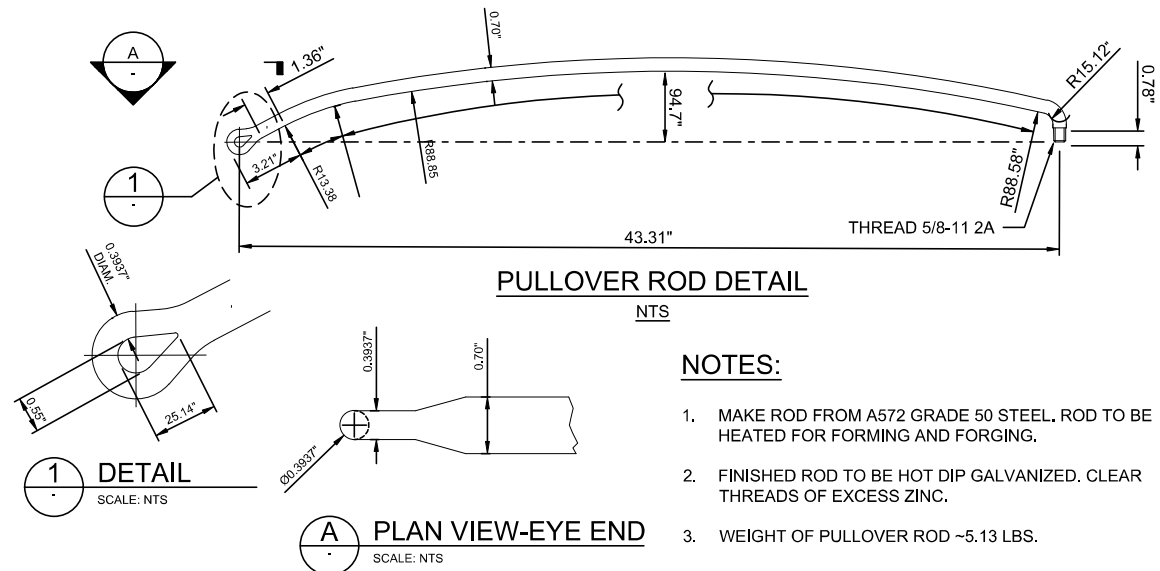
NOTES: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL. ITEM 2 CAN BE SUBSTITUTED WITH A 5/16" PREFORMED END FITTING IF SPACE PERMITS (PREFORM GDE-2106).

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 Chelmsford, MA 01824 816-360-2700 Phone: 978-905-4000 Certificate of Authority: 000856 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Y056.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: Y056	SHEET NO.: 360	
			CHECKED BY	BP									NOT FOR CONSTRUCTION
			DRAWN BY	PFW									
			CHECKED BY	BP									
			APPROVED BY	NKS									
PLOT DATE: 12/21/2022			1:54:00 PM		DATE	12/23/2022	OVERHEAD CONTACT SYSTEM REGISTRATION ASSEMBLIES PULLOVER ASSEMBLIES (SHEET 1 OF 2)						



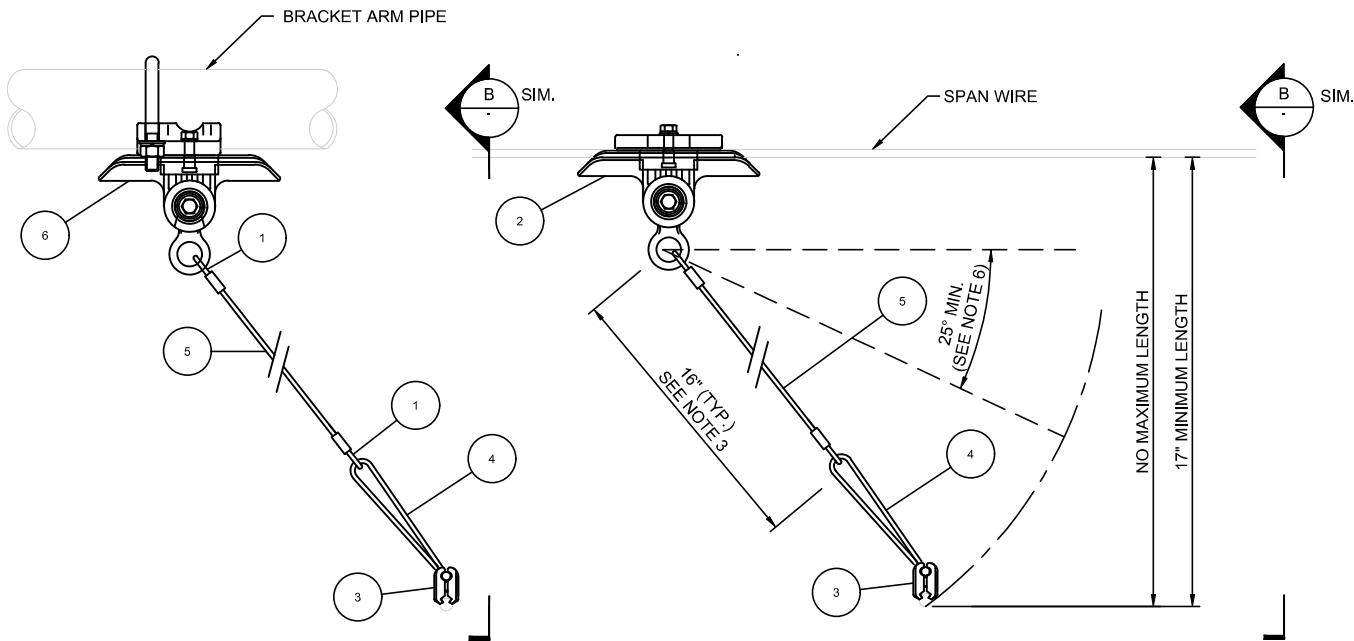
BASIS OF DESIGN						
ITEM	QTY.				DESCRIPTION	PART NO.
	FPO-2	PO-2	PO-2A	PO-2H		
2	1	-	-	-	TERMINATION, SPAN WIRE 5/16"	MAC E0493-01
3	1	-	-	-	THIMBLE OPEN PATTERN, 5/16" G-408	CROSBY 1037559
4	1	-	-	-	LOOP INSULATOR	MAC D2864-01
5	2	2	2	-	STEADY ARM ROD, 3.61 FT	MAC C1813-07
5H	-	-	-	2	STEADY ARM ROD, 3.61 FT	MAC D2580-02
6	1	-	-	-	CONNECTION FORK W/ U-BOLT	MAC E1225-01
7	1	-	-	-	SHACKLE FOR LOOP INSULATOR	MAC E0928-02
8	2	2	2	-	CLAMP, CONTACT WIRE	MAC B0348-01
8H	-	-	-	2	CLAMP, CONTACT WIRE	MAC D1081-01
9	-	1	-	-	LINE INSULATOR, G2 SYNTHETIC	MAC C1673-01
10	-	2	2	-	HANGER WIRE, 4mmØ WITH TWO LOOPS, 7.76" LONG	MAC D1340-04
10H	-	-	-	2	HANGER WIRE, 1/4" STAINLESS STEEL	-
11	-	4	4	-	THIMBLE, J SYNTHETIC	MAC D0719-01
11H	-	-	-	4	THIMBLE, FOR 1/4" SS HANGER WIRE	-
12	-	-	1	1	LINE INSULATOR, G2 SYNTHETIC, FOR PIPE	MAC C1685-01

NOTES: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL. ITEM 2 CAN BE SUBSTITUTED WITH A 5/16" PREFORMED END FITTING IF SPACE PERMITS (PREFORM GDE-2106).



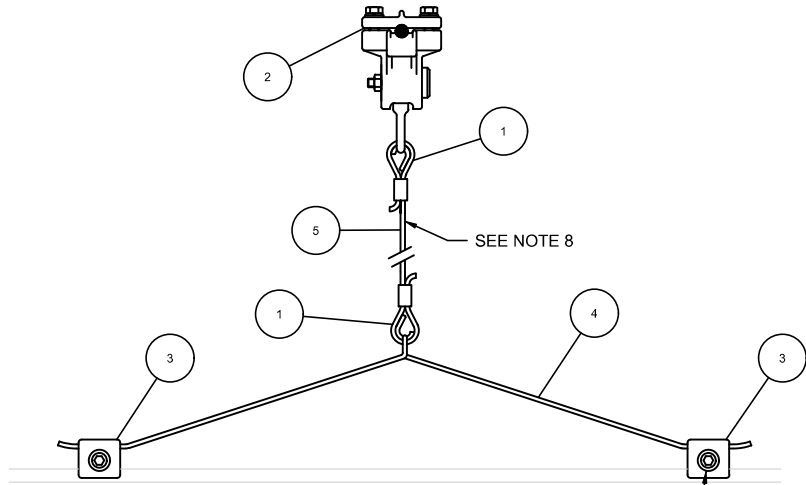
- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - USE SPAN SPACER TO PREVENT FOULING AT SPAN WIRE FOR FLOATING PULLOVER. SEE DRAWING Y064 FOR DETAILS.
 - HANGER WIRE, ITEM 10 FOR ASSEMBLY PO-2 AND PO-2A, LENGTHS IS TYPICALLY 7.76". LENGTH MAY BE INCREASED TO SUIT CONDITIONS. MAXIMUM LENGTH IS 15 3/4".
 - MAXIMUM LOADING FOR A DOUBLE PULLOVER ASSEMBLY IS 900 LBS.
 - PULLOVER RODS TO BE ONE PIECE UNITS HOT FORGED AND FORMED.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE		
			CHECKED BY	BP				HDR Engineering, Inc.			HNTB	
			DRAWN BY	PFW			The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS					
			CHECKED BY	BP			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471					
			APPROVED BY	NKS			300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270					
PLOT DATE: 12/21/2022			3:42:14 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION			OVERHEAD CONTACT SYSTEM REGISTRATION ASSEMBLIES PULLOVER ASSEMBLIES (SHEET 2 OF 2)	DRAWING NO.: Y057	SHEET NO.: 361



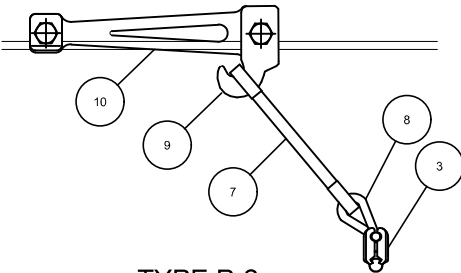
PENDULUM - P-1
SCALE: NTS
ASSEMBLY WEIGHT: 4.537 LBS

PENDULUM - P-1A
SCALE: NTS
ASSEMBLY WEIGHT: 3.721 LBS

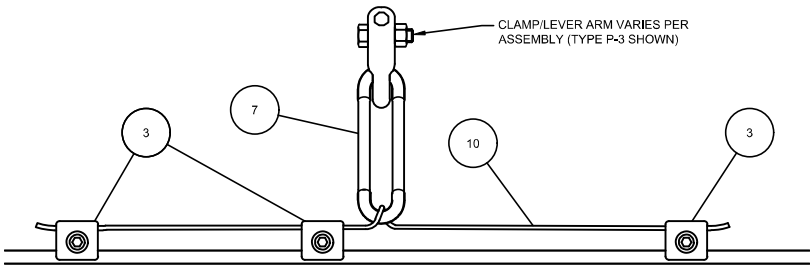


B VIEW
SCALE: NTS

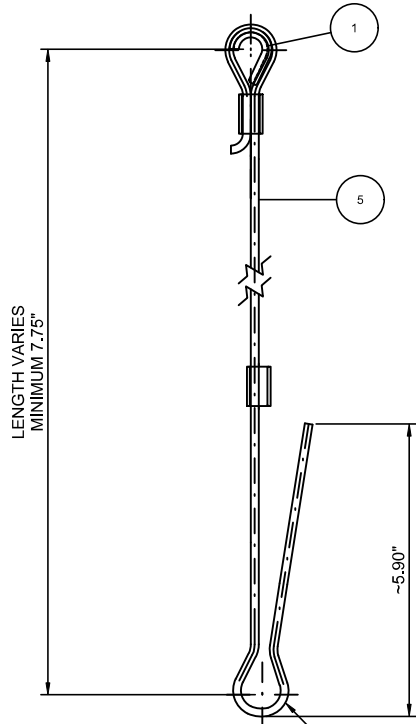
HOLLOW HEX SCREW TO BE FLAT HEAD
M14 x 1.5, 0.59" LONG, STAINLESS
STEEL WITH 5/16" HEX BROACH (TYP)



TYPE P-2
SCALE: NO SCALE



A VIEW
SCALE: NO SCALE



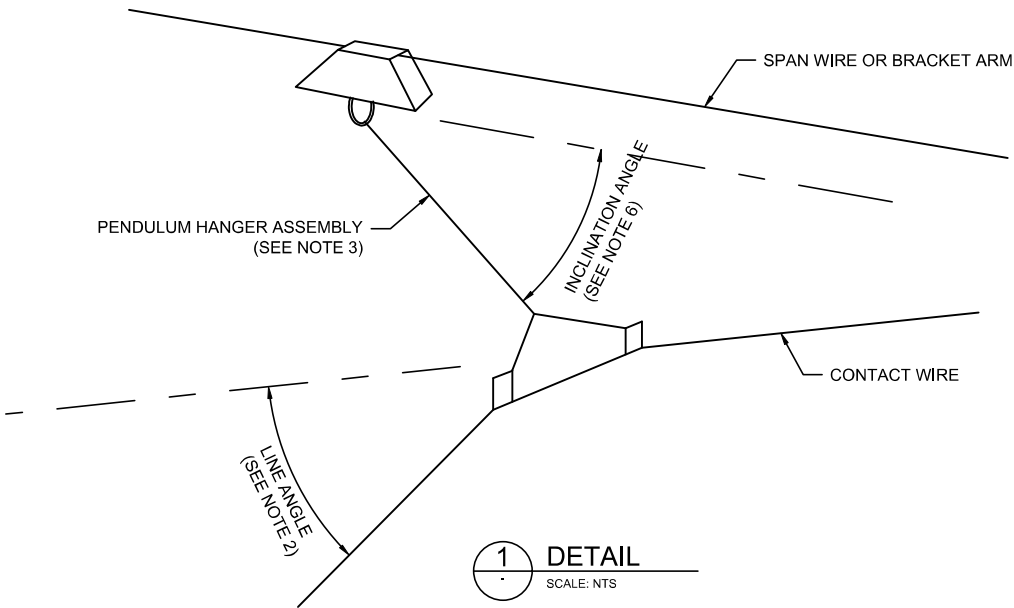
FORMED LOOP INSIDE RADIUS TO MATCH RADIUS OF
INSULATED J THIMBLE

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- MAXIMUM LINE ANGLE FOR P-1 PENDULUM IS 4.5 DEGREES, SEE DETAIL 1.
- HANGER WIRE, ITEM 5 FOR ASSEMBLY P-1 AND P-1A, LENGTHS IS TYPICALLY 16". LENGTH MAY BE INCREASED TO SUIT CONDITIONS.
- LENGTH OF HANGER WIRE FOR SINGLE PENDULUM HANGER TO BE MEASURED IN THE FIELD SO THAT THE CONTACT WIRE HANGS AT THE REQUIRED HEIGHT +/-2". USE HANGER WIRE BENDING TOOL MAC PRODUCTS WC1528-01 TO FORM LOOPS.
- CONTACT WIRE CLAMP TO BE VERTICAL AFTER FINAL INSTALLATION.
- INCLINATION ANGLE NOT TO BE LESS THAN 25°. IF ANGLE IS LESS THAN 25°, USE A PO-01 STYLE PULLOVER. IF INCLINATION ANGLE IS BETWEEN 85° AND 90°, USE A STRAIGHT LINE HANGER SUPPORT ASSEMBLY. SEE DETAIL FOR ASSEMBLY FH-1 AND FH-1A ON DRAWING Y059.
- ALONG TRACK POSITION OF PENDULUM DUE TO CONTACT WIRE TEMPERATURE MOVEMENT TO BE SET ACCORDING TO CONTACT WIRE LENGTH CHANGE TABLE ON DRAWING Y009.
- HANGER WIRE CONSISTS OF A SOLID S.S. STEEL WIRE, 4mmØ AS INDICATED ON ITEM 5, WITH TWO NON-CONDUCTING J THIMBLES ITEM 1, AND TWO SLIDING SLEEVES. LOOPS (PART OF THE HANGER WIRE ASSEMBLY) ARE FORMED AT EACH END WITH A BENDING TOOL DESIGNED FOR THE LOOPS AND THE SLEEVES ARE SLID UP THE THE LOOP. THE TAIL PIECE IS BENT BACK AGAINST THE SLEEVE ~180° AND CUT OFF.
- ALL CONTACT WIRE CLAMPS FOR ALL DEVICES AND ASSEMBLIES, UNLESS NOTED SHALL HAVE HOLLOW HEX SCREWS, FLAT HEAD M14 x 1.5, LENGTH TO SUIT, STAINLESS STEEL WITH 5/16" HEX BROACH (TYP). WHEN COMPLETELY TIGHTENED, THREADED END OF SCREW SHALL BE FLUSH WITH CLAMP.
- SHORT PENDULUM HANGER ASSEMBLY P-2 TO BE USED UNDER THE HEART OF AMERICA BRIDGE.

HANGER WIRE MAKE UP

- HANGER WIRE IS SOLID AND NOT STRANDED.
- MEASURE LENGTH REQUIRED FROM LINE INSULATOR TO HANGER BOW.
- IF USING STRAIGHT WIRE WITH NO LOOP, FORM ONE LOOP AND PLACE IN BENDING TOOL. THIS DEVICE HAS A RULER AS PART OF IT FOR MEASURING REQUIRED LENGTH TO FORM THE SECOND LOOP. DISTANCE MEASURED IS LOOP TO LOOP.
- OPERATE THE BENDING TOOL LEVER PER MANUFACTURER'S DIRECTIONS TO FORM THE FIRST BEND AND THEN THE LOOP AND THEN THE LAST BEND.
- INSERT HANGER WIRE WITH BENDS INTO ASSEMBLIES AND INSERT THE NON-CONDUCTING J THIMBLE INTO THE WIRE LOOP. PRESS THE TAIL END OF THE HANGER WIRE LOOP TO THE STRAIGHT PIECE AND SLIDE THE SLEEVE OVER THE TWO WIRES TO THE BEND OF THE LOOP.
- BEND THE TAIL PIECE BACK AGAINST THE SLEEVE ABOUT 90° TO LOCK THE SLEEVE AGAINST THE LOOP AND CUT OFF AS SHOWN ON DETAIL.
- EACH HANGER WIRE LOOP TO HAVE AN INSULATED J THIMBLE.
- MINIMUM LENGTH LOOP TO LOOP IS 7.75".
- HANGER WIRE SHOWN IS USED WITH PO TYPE ASSEMBLIES AS WELL AS TYPE P ASSEMBLIES.



1 DETAIL
SCALE: NTS

BASIS OF DESIGN						
ITEM	QTY.			DESCRIPTION	SUPPLIER	PART NUMBER
	P-1	P-1A	P-2			
1	2	2	-	THIMBLE, J SYNTHETIC	MAC	D0719-01
2	1	-	-	LINE INSULATOR, G1 FOR SPAN WIRE	MAC	C2368-01
3	2	2	3	CLAMP FOR CONTACT WIRE	MAC	D1618-02
4	1	1	-	PULLOFF BOW, TYPE 2	MAC	D0916-02
5	1	1	-	HANGER WIRE	MAC	D1340-05
6	-	1	-	LINE INSULATOR, G1, FOR 2" PIPE	MAC	C2369-02
7				LOOP INSULATOR	MAC	D4069-01
8				PULLOFF BOW, SHORT PENDULUM	MAC	D0916-01
9				HOOK PLATE	MAC	E1112-02
10	-	1		LEVER ARM RIGID	MAC	D0427-01

REV	DATE	DESCRIPTION	DESIGNED BY	PFW
			CHECKED BY	BP
			DRAWN BY	PFW
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022



ISSUE FOR BID		DATE: 12-23-2022	
 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	
NOT FOR CONSTRUCTION			

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM REGISTRATION ASSEMBLIES PENDULUM SUSPENSION ASSEMBLIES

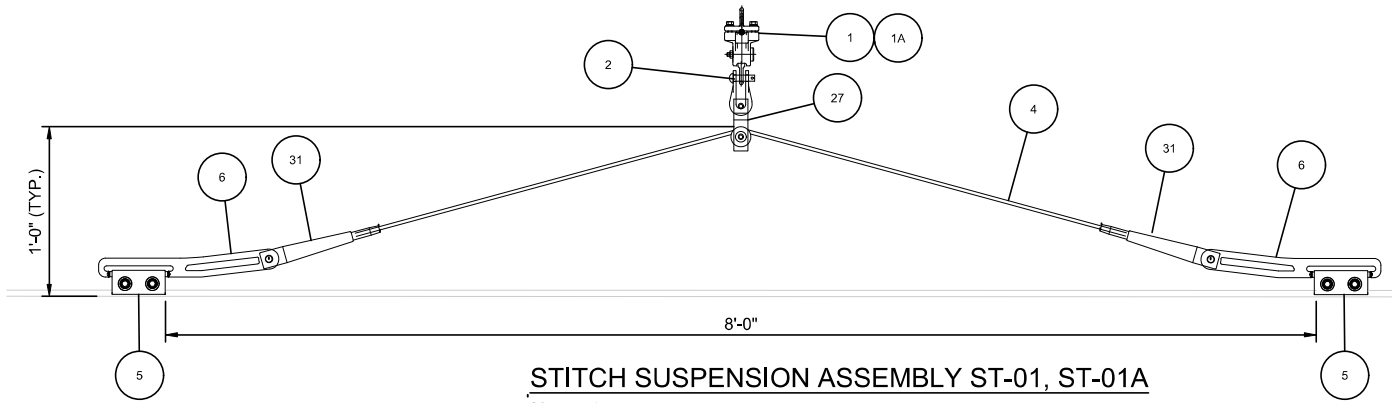
SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: Y058.dwg	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y058	SHEET NO.: 362

NOTES:

1.
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2.
- STITCH SUSPENSION ST-02 TO BE USED FOR THE MID-POINT ANCHOR AND OFFSET FROM CENTERLINE OF TRACK TO ESTABLISH AN INCLINATION TO PREVENT A HARD SPOT.

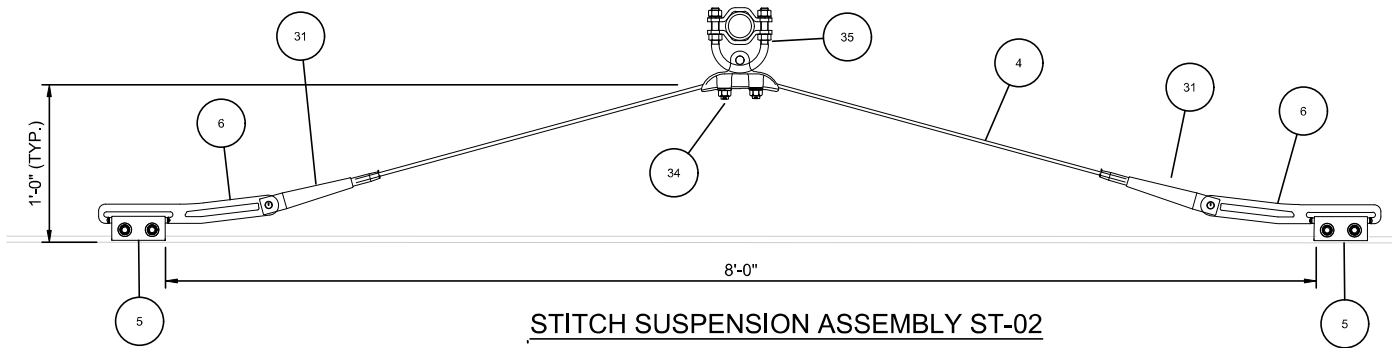
BASIS OF DESIGN			
ITEM NO.	DESCRIPTION	SUPPLIER	PART NUMBER
1	LINE INSULATOR, TYPE G1 FOR 2" PIPE	MAC	C1682-02
1A	LINE INSULATOR, TYPE G1 FOR SPAN WIRE	MAC	C1670-01
2	SHACKLE, TYPE 1	MAC	D0231-01
4	STITCH ROPE , 11MMØ KEVLAR	PHILLYSTRAN	HPTG11200I
5	CONTACT WIRE CLAMP FOR DELTA SUSP.	MAC	D1618-01
6	PULLOFF BRACKET FOR DELTA SUSP.	MAC	D3289-01
7	U-BOLT	MAC	D2340-05
13	THIMBLE, J SYNTHETIC	K+M	D0719-01
17	CRIMP SLEEVE, 3/16" WIRE	NICOPRESS	18-6-X
18	WIRE ROPE, 3/16" BRONZE	---	---
19	CLAMP, CATENARY HANGER	MAC	KMA-238
21	WASHER, FLAT, SS, FOR Ø8MM BOLT	---	---
25	WASHER, SPLIT LOCK, SS, FOR Ø12MM BOLT	---	---
26	NUT, SS, FOR Ø12MM BOLT	---	---
27	PULLEY	MAC	300221
27A	SUSPENSION ANGLE CLAMP		
28	THIMBLE, 3/16", S.S.	---	---
30	MESSENGER CABLE INSULATOR, ROTATABLE	MAC	D2363-01
31	END TERMINATION FOR KEVLAR ROPE	PHYLLISTRAN	ESA 5112
32	LOOP INSULATOR	MAC	D2864-01
33	BEAM CLAMP	---	---
34	SUSPENSION CLAMP	HABBELL	MS60N
35	2" PIPE CLAMP WITH HALF RING	MAC	D2055-00

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



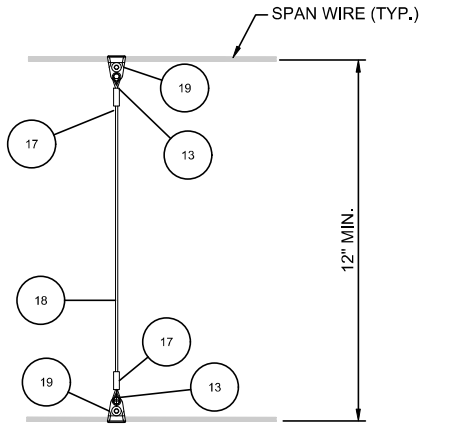
STITCH SUSPENSION ASSEMBLY ST-01, ST-01A

SCALE: 1-1/2" = 1'-0"



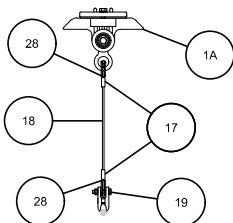
STITCH SUSPENSION ASSEMBLY ST-02

SCALE: 1-1/2" = 1'-0"



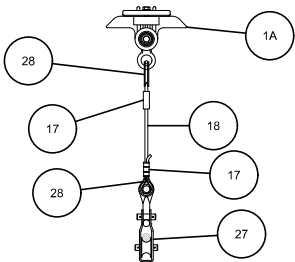
HEAD SPAN HANGER ASSEMBLY

SCALE: 1-1/2" = 1'-0"



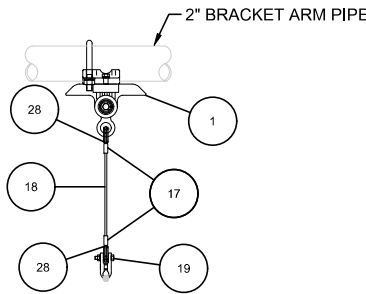
STRAIGHT LINE HANGER FH-1

SCALE: 1-1/2" = 1'-0"



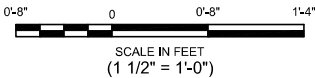
STRAIGHT LINE HANGER FH-2

SCALE: 1-1/2" = 1'-0"



STRAIGHT LINE HANGER FH-1A

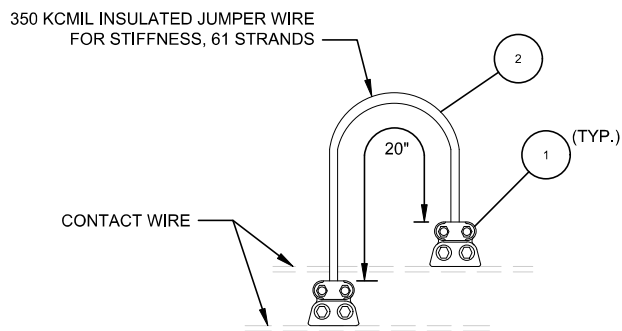
SCALE: 1-1/2" = 1'-0"



REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": AS SHOWN	
			CHECKED BY	BP					The HNTB COMPANIES	OVERHEAD CONTACT SYSTEM		FILENAME:	Y059.dwg
			DRAWN BY	PFW			10450 Holmes Road		INFRASTRUCTURE SOLUTIONS	REGISTRATION ASSEMBLIES		CONTRACT NO.:	
			CHECKED BY	BP			Suite 600		300 Apollo Drive	SUSPENSION ASSEMBLIES		CONTRACT NO. ##	
			APPROVED BY	NKS			Kansas City, MO 64131-3471		Chelmsford, MA 01824			VOLUME:	
PLOT DATE: 12/21/2022			1:55:26 PM		DATE	12/23/2022	Certificate of Authority: 000856		Certificate of Authority: 001270	NOT FOR CONSTRUCTION		DRAWING NO.:	Y059
												SHEET NO.:	363

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. JUMPER CABLES ATTACHED TO SINGLE CONTACT WIRES SHALL BE INSULATED.
3. CONTACT WIRE CLAMPS TO BE TOP ENTRY.



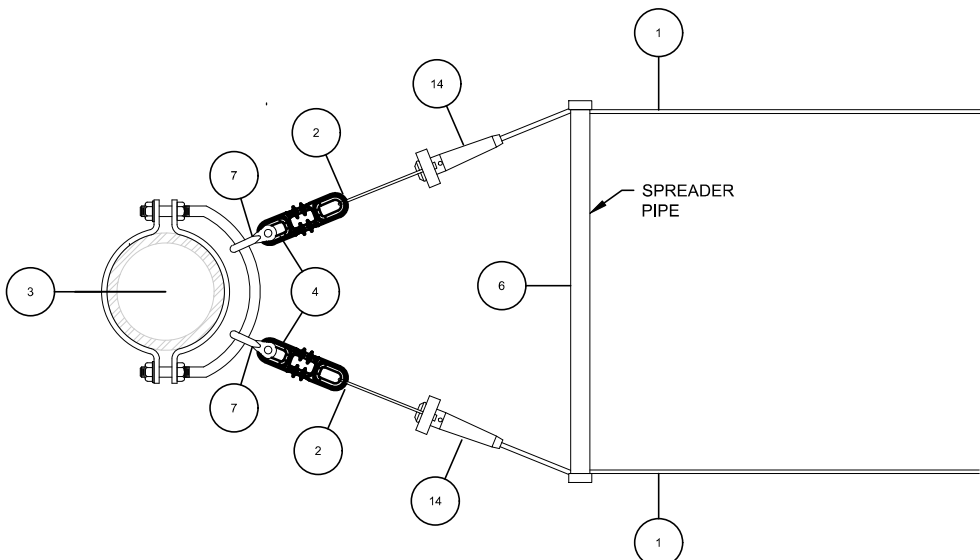
JUMPER ASSEMBLY - JRA-1

SCALE: NTS

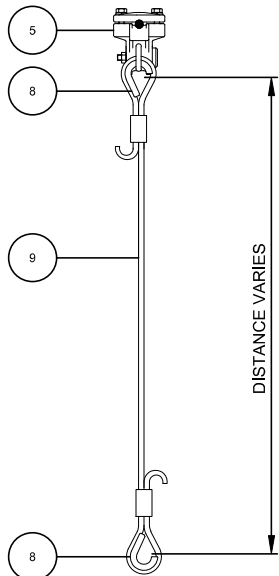
BASIS OF DESIGN				
ITEM	QTY.	DESCRIPTION	SUPPLIER	PART NUMBER
	JRA-1			
1	2	FEED TAP CLAMP EAR	MAC	D0445-01
2	A/R	350 KCMIL INSULATED FEEDER CABLE	-	2,000 V

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM IN-SPAN ASSEMBLIES JUMPER ASSEMBLIES	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	BP				HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		NOT FOR CONSTRUCTION	FILENAME:
			DRAWN BY	PFW							Y061.dwg
			CHECKED BY	BP							CONTRACT NO.:
			APPROVED BY	NKS							CONTRACT NO. ###
PLOT DATE: 12/21/2022			3:00:39 PM		DATE	12/23/2022			VOLUME:		
									1		
									DRAWING NO.:		
									Y061		
									SHEET NO.:		
									364		



3 SPAN WIRE TRAPEZE - PLAN VIEW
SCALE: NTS

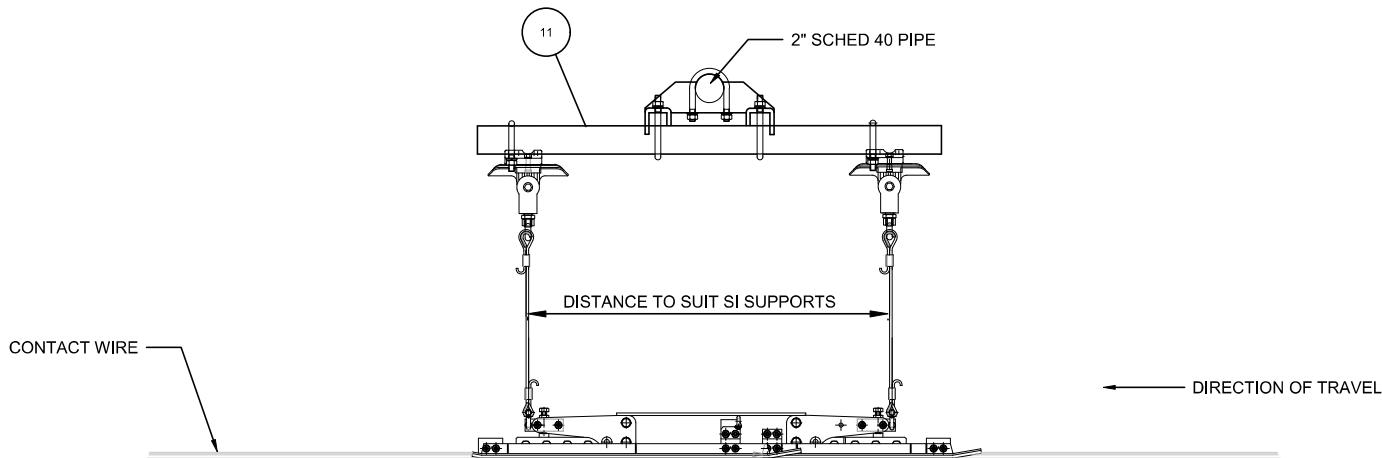


1 DETAIL
SCALE: NTS

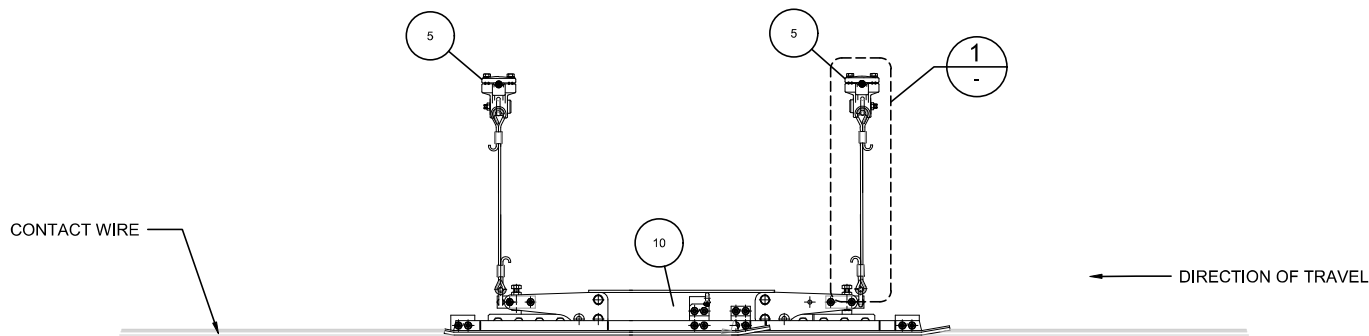
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- FOR LOCATION AND TYPE OF SUSPENSION FOR SECTIONNER REFER TO LAYOUT DRAWINGS.
- SECTION INSULATOR TO BE SUSPENDED WITH TRIANGULAR SUSPENSION WIRES AS INDICTED.
- LINE ANGLE FOR SECTION INSULATOR TO BE 0 DEGREES IN A 120 FOOT SPAN. HANGER WIRE ANGLE SHALL ALLOW THE PLANE OF THE si TO BE PARALLEL WITH THE TRACK.
- CROSS SPAN SUSPENSION TO BE TIGHT WITH MINIMAL SAG.
- SECTION INSULATOR TO BE CENTERED ON TRACK CENTERLINE.
- RUNNER PLANE OF SECTION INSULATOR TO BE PARALLEL WITH TRACK PLANE. ADJUST LINE INSULATOR HANGER WIRES AS NEEDED.
- INSTALL AND ADJUST SECTION INSULATOR AND SUSPENSION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- INSTALL LOOP INSULATORS IN DOUBLE SPAN WIRES AS SHOWN ON DTHIS DRAWING.
- SUSPENSION OF SECTION INSULATOR AT TRACK STATION S 236+59 CROSSOVER IS FROM A SPAN WIRE MESSENGER AND WILL REQUIRE A TRIANGULAR SUSPENSION WITH FLEXIBLE 3/16" WIRE ROPE.
- SECTION INSULATOR TO BE SIEMENS, SAME MODEL AS USED ON THE STARTER LINE.

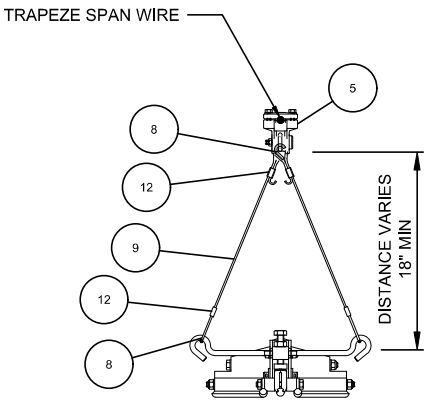
BASIS OF DESIGN			
ITEM	DESCRIPTION	SUPPLIER	PART NO.
1	WIRE, SPAN, 5/16"	-	-
2	TERMINATION, SPAN WIRE, 5/16", COMPRESSION SLEEVE	-	-
3	CLAMP FOR POLE, MULTIPLE SPANS	SEE DRAWING Y044	
4	THIMBLE, 5/16", STL HDG	-	-
5	LINE INSULATOR, TYPE G1 SYNTHETIC, SPAN WIRE, OR PIPE	-	-
6	PIPE, SPREADING, 3/4" SCHED. 80 STEEL	MAC	E0114-00
7	SHACKLE	-	-
8	THIMBLE, INSULATED J	-	-
9	HANGER WIRE 3/16" S.S 7X19 WIRE ROPE	-	-
10	SECTION INSULATOR - SIEMENS	-	-
11	SUPPORT X BRACKET FOR SECTION INSULATOR	-	-
12	SLEEVE, CRIMP FOR 3/16" WIRE ROPE	-	-
13	SCREW CAP FOR PIPE	-	-
14	STRANDVISE 5/16"	-	-



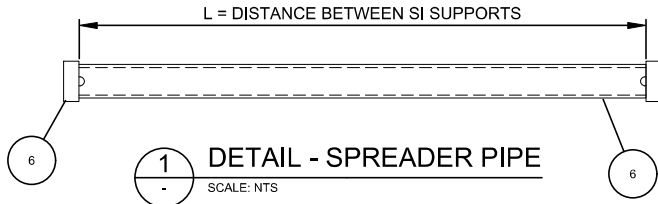
1 SECTION INSULATOR SUSPENSION FROM PIPE, SI-2
SCALE: NTS



2 SECTION INSULATOR SUSPENSION FROM TRAPEZE, SI-1
SCALE: NTS



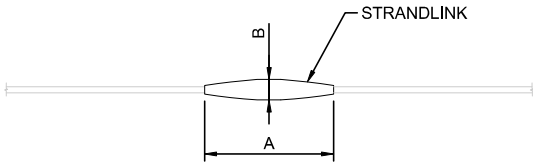
4 SECTION INSULATOR - END VIEW
SCALE: NTS



1 DETAIL - SPREADER PIPE
SCALE: NTS

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM IN-SPAN ASSEMBLIES SECTION INSULATOR ASSEMBLY	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	BP									FILENAME: Y062.dwg	
			DRAWN BY	PFW									CONTRACT NO.: CONTRACT NO. ###	
			CHECKED BY	BP									VOLUME: 1	
			APPROVED BY	NKS									DRAWING NO.: Y062	SHEET NO.: 365
PLOT DATE: 12/21/2022			1:57:16 PM			DATE	12/23/2022	NOT FOR CONSTRUCTION						

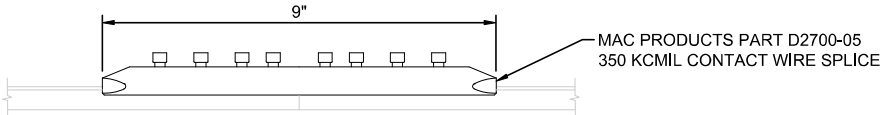
- NOTES:
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - CONTACT WIRE SPLICE TO BE LOCATED NO FURTHER THAN 10' FROM REGISTRATION OR STEADY ARM.



SPAN WIRE SPLICE

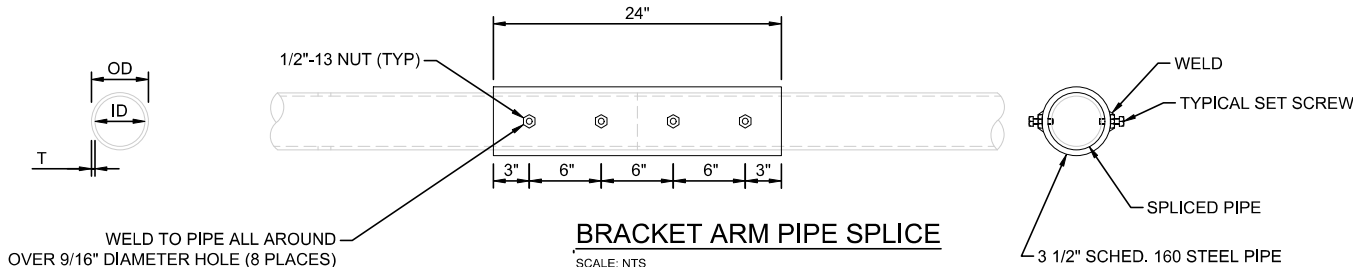
SCALE: NTS

STRANDLINK (UNIVERSAL GRADE)				
WIRE SIZE	RANGE (INCHES)	DIM 'A' (INCHES)	DIM 'B' (INCHES)	MACLEAN CAT NO.
1/4"	0.215-0.270	7.62	1.13	5040
5/16"	0.270-0.315	9.28	1.26	5041
3/8"	0.325-0.392	10.62	1.45	5042
1/2"	0.455-0.520	10.75	1.70	5044



CONTACT WIRE SPLICE

SCALE: NTS



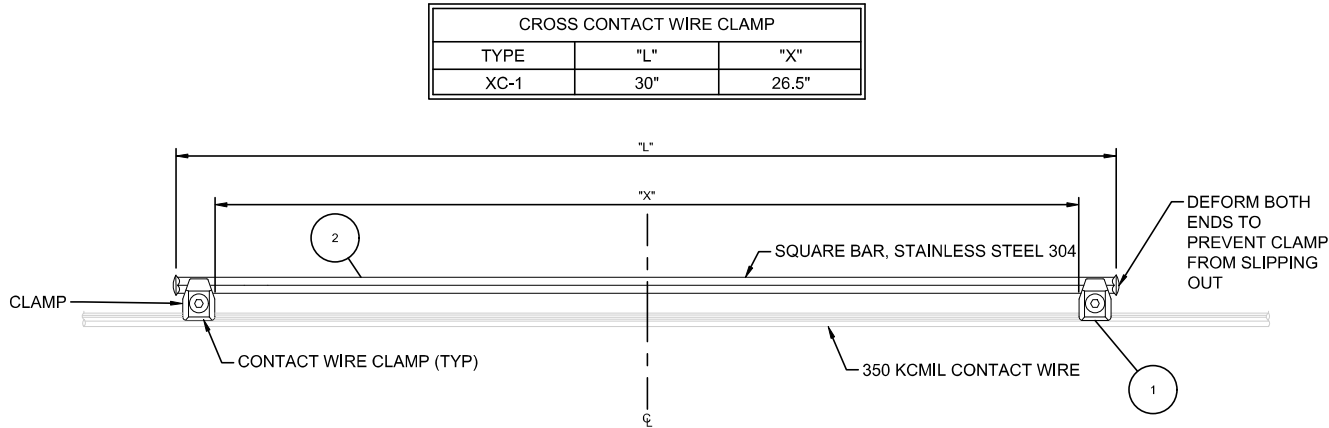
BRACKET ARM PIPE SPLICE

SCALE: NTS

*PROVIDE 8 1/2 -13 SS STEEL 304 SET SCREWS. ASSEMBLY TO BE HDG, CHASE THREADS AFTER GALVANIZING.

PIPE SPLICE			
SIZE OF PIPE JOINED	OD	ID	T
2" PIPE (SCHED. 40)	2.375"	2.067"	0.154"
2" PIPE (SCHED. 80)	2.375'	1.939"	0.218"
3 1/2 " PIPE	4"	2.728"	0.636"

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	BP			 HDR Engineering, Inc.			FILENAME:	
			DRAWN BY	PFW			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471	The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824		CONTRACT NO.:	###
			CHECKED BY	BP			816-360-2700 Certificate of Authority: 000856	Phone: 978-905-4000 Certificate of Authority: 001270		VOLUME:	1
			APPROVED BY	NKS			NOT FOR CONSTRUCTION			DRAWING NO.:	Y063
PLOT DATE: 12/21/2022			1:58:23 PM		DATE	12/23/2022	OVERHEAD CONTACT SYSTEM IN-SPAN ASSEMBLIES TYPICAL SPLICE DETAILS			SHEET NO.:	366

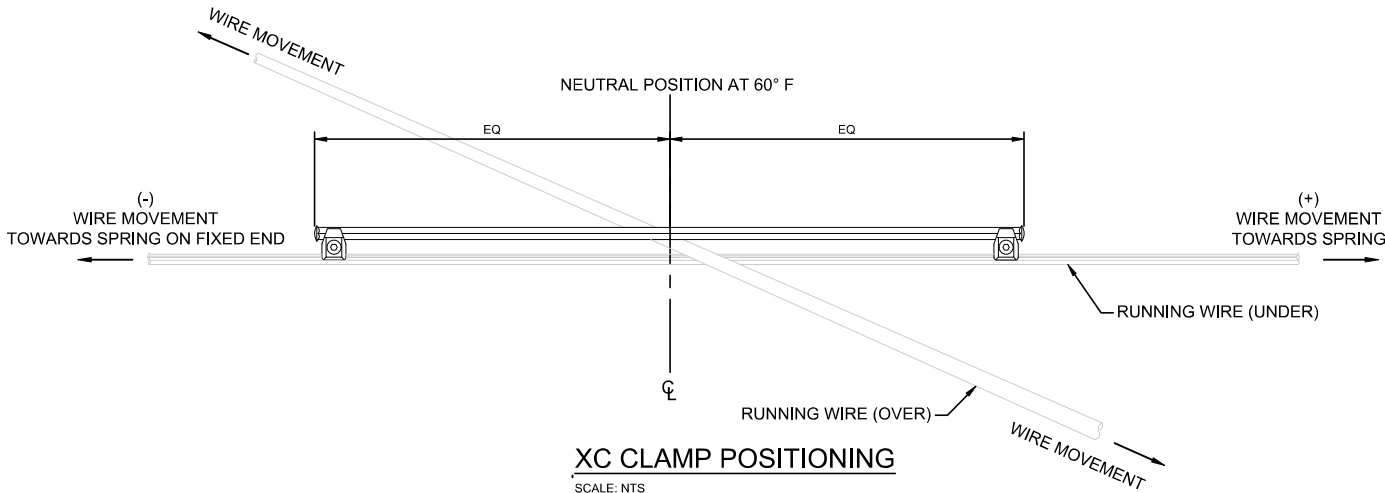


CROSS CONTACT WIRE CLAMP XC-1

SCALE: NTS

BASIS OF DESIGN				
ITEM NO.	QTY	DESCRIPTION	SUPPLIER	PART NUMBER
1	2	TROLLEY WIRE CLAMP, BRONZE	MAC	D0134-01
2	1	SQUARE BAR, 7/16" SS 316	-	-

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



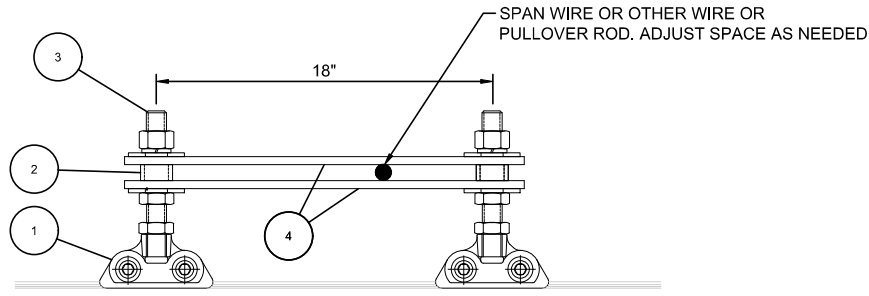
SCALE: NTS

NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- CROSS CONTACT WIRE CLAMPS TO BE POSITIONED ON UNDER RUNNING WIRES AFTER BOTH SETS OF CONTACT WIRES ARE PROPERLY TENSIONED AND TERMINATED.
- CROSS CONTACT WIRE CLAMP TO BE ATTACHED TO UNDER RUNNING WIRE WITH CENTER POSITION DIRECTLY OVER CROSSING WIRE AFTER INSTALLATION OF UNDER RUNNING CONTACT WIRE. IN CONSTANT TENSIONED SECTIONS, RELEASE OF WEIGHTS AFTER WIRE STRINGING WILL AUTOMATICALLY POSITION THE CROSS CONTACT WIRE CLAMP.
- USE POSITION CHART TO CHECK CLAMP POSITION AFTER CONTACT WIRE STRINGING PROCESS IS COMPLETE. MAKE ADJUSTMENTS AS REQUIRED.
- FOR ALONG TRACK MOVEMENT, REFER TO DRAWING Y009.
- SPAN SPACER TO BE USED WHERE SPAN WIRES OR OUT OF RUNNING CONTACT WIRES CROSS IN-RUNNING CONTACT WIRES 6" OR LESS. THEY SHALL ALSO BE USED WHERE PULLOVER RODS CROSS OVER IN-RUNNING CONTACT WIRES AND UPLIFT SPACING BETWEEN THE TWO IS 6" OR LESS.

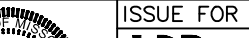
BASIS OF DESIGN				
ITEM NO.	QTY	DESCRIPTION	SUPPLIER	PART NUMBER
1	2	CW CLAMP, ETB, WITH 5/8" THREAD, FOR 350 KCMIL CW	MAC	B0348-01
2	2	GLASTIC SPACER, GRADE 1130	MAC	KMA-672
3	2	5/8" THREADED ROD 7" LONG, WITH 2 NUTS, 2 LOCK WASHERS, 1 WASHER	-	-
4	2	GLASTIC BAR, GRADE 1130, 14" x 1.5" x 1/4"	MAC	KMA-673

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.



SPAN SPACER ASSEMBLY SS-1

SCALE: NTS

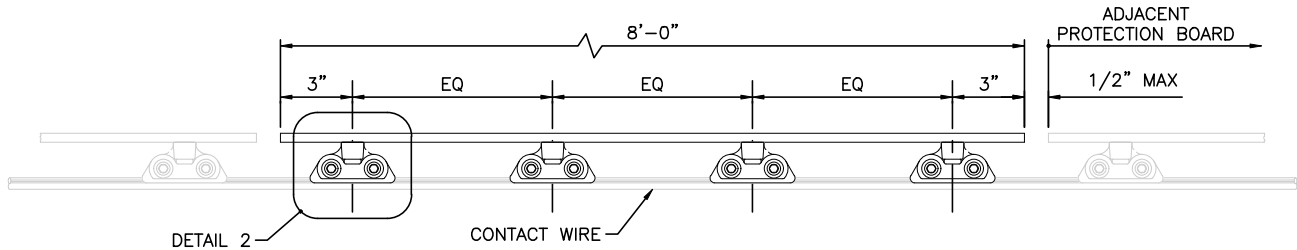
REV	DATE	DESCRIPTION	DESIGNED BY	PFW		 BHANUVADAN K PARAKKAL - ENGINEER LICENSE NO. 2021046193 12/22/2022	ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM IN-SPAN ASSEMBLIES SPAN SPACER AND CROSS CONTACT WIRE CLAMP ASSEMBLIES	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	BP			 HNTB Engineering, Inc. The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 Chelmsford, MA 01824 816-360-2700 Phone: 978-905-4000 Certificate of Authority: 000856 Certificate of Authority: 001270	NOT FOR CONSTRUCTION		FILENAME: Y064.dwg
			DRAWN BY	PFW						CONTRACT NO.: CONTRACT NO. ###
			CHECKED BY	BP						VOLUME: 1
			APPROVED BY	NKS						DRAWING NO.: Y064
PLOT DATE: 12/21/2022			2:00:04 PM		DATE	12/23/2022				

BASIS OF DESIGN (PB-1)			
ITEM	DESCRIPTION	SUPPLIER	PART NO.
1	CONTACT WIRE CLAMP, ETB	MAC	B0348-01
2	8'-0" x 0'-2" x 3/8" THICK FIBERGLASS (G10) BOARD	---	---
3	5/8" x 5/8" FULLY THREADED FIBERGLASS FLAT HEAD HEX SOCKET SCREW	---	---

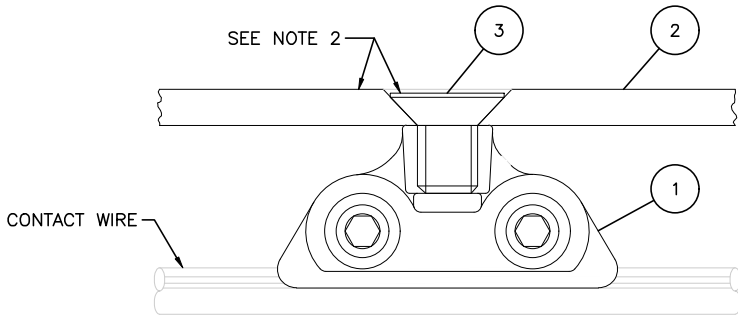
NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.

NOTES:

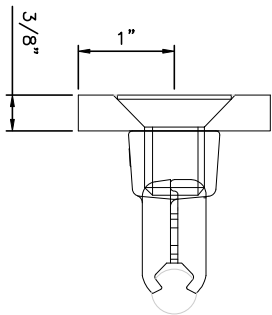
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- COUNTERSINK BOLT HOLE SO THAT TOP OF SCREW IS FLUSH WITH TOP OF FIBERGLASS BOARD.
- APPLY LOCTITE 242 TO SCREW THREADS.
- USE COVER BOARD WHEN DISTANCE BETWEEN TOP OF TROLLEY WIRE AND BOTTOM OF BRIDGE IS 12" OR LESS.
- WHEN INSTALLED BELOW AN OVERHEAD BRIDGE, THE CONTRACTOR SHALL EXTEND COVER BOARD BEYOND THE EXTENT OF THE BRIDGE LIMITS IN THE AMOUNT OF TWICE THE ATM FOR SPECIFIC WIRE RUN THE BOARD IS BEING INSTALLED ON.



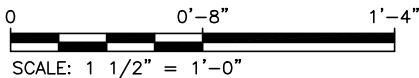
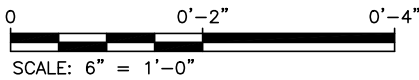
1
-
CONTACT WIRE PROTECTION BOARD
SCALE: 1 1/2" = 1'-0"



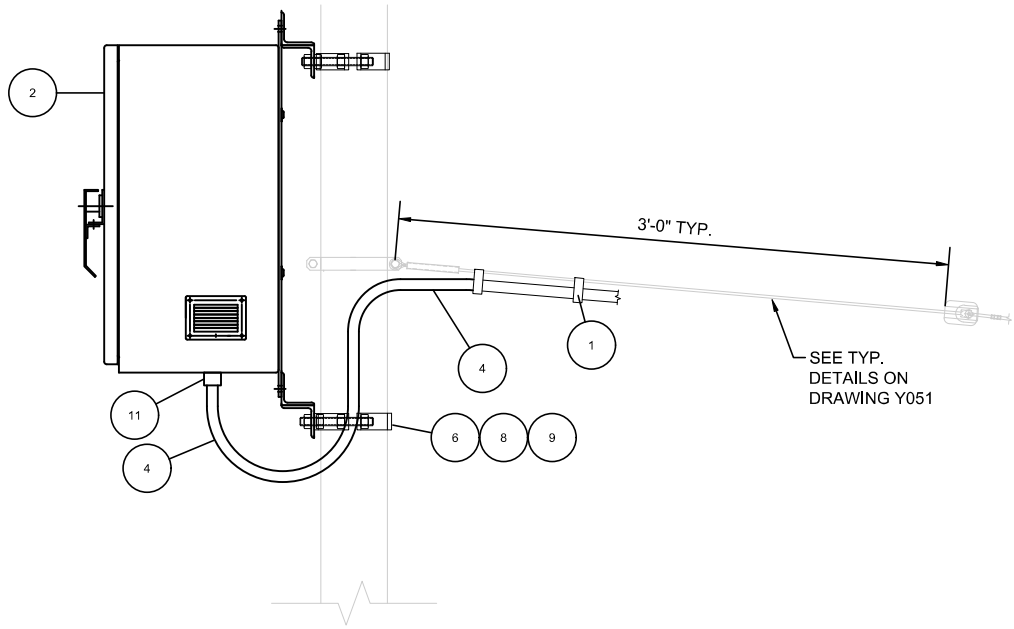
2
-
PROTECTION BOARD CLAMP DETAIL-PB-1
SCALE: 6" = 1'-0"



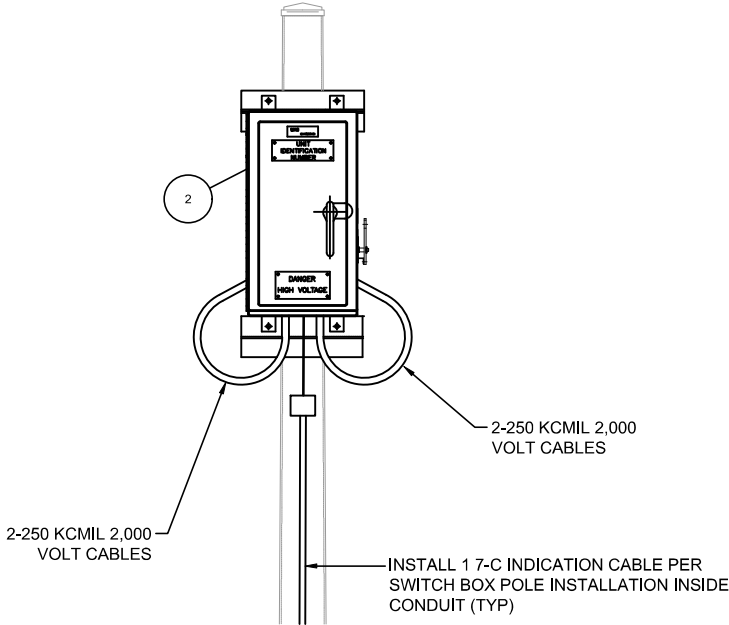
END VIEW



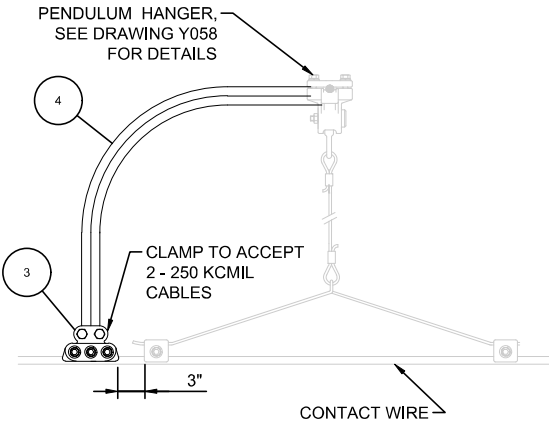
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM IN-SPAN ASSEMBLIES CONTACT WIRE PROTECTION BOARD	SCALE FOR 22"x34": AS SHOWN		
			CHECKED BY	BP								FILENAME:		
			DRAWN BY	PFW								CONTRACT NO.:		
			CHECKED BY	BP								CONTRACT NO. ###		
			APPROVED BY	NKS								VOLUME:		
PLOT DATE: 12/21/2022			2:01:45 PM			DATE	12/23/2022	NOT FOR CONSTRUCTION			DRAWING NO.:	Y065	SHEET NO.:	368



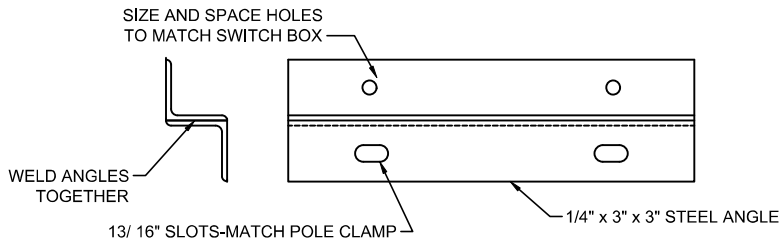
FEEDER TAP ASSEMBLY AT SPAN WIRE - FTA-1
SCALE: NTS



SWITCH BOX ARRANGEMENT SINGLE
NO JUMPER SWITCH - FTA-1



1 FEEDER TAP TO CONTACT WIRE
SCALE: NTS



SWITCH BOX MOUNTING BRACKET
SCALE: NTS

NOTES

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- ARRANGEMENTS SHOWN ARE TYPICAL AND CONSTRUCTION CREWS MAY MAKE ALTERATIONS OR ADJUSTMENTS TO SUIT FIELD CONDITIONS.
- LASHING TIE TO HAVE HOOK PLACED OVER SPAN WIRE AND BENT TIGHT. LOOP END FOR FEEDER CABLE PLACED IN LOOP TO BE BE PULLED UP TIGHT.
- INSULATE CABLE AT POLE IF CABLE TOUCHES POLE.
- REFER TO LAYOUT DRAWINGS FOR ARRANGEMENT OF DISCONNECT SWITCHES.
- DISCONNECT SWITCH TO BE 2,000 AMP KNIFE SWITCH. HINGE AND JAW TO HAVE TERMINAL FOR DUAL 250 KCMIL CABLES. SWITCH TO BE HOOK STICK OPERATED AND ENCLOSED IN A NON-CONDUCTING UV RESISTANT ENCLOSURE. BLADE TO OPEN 180°. COLOR OF BOX TO BE LIGHT GRAY.
- EACH SWITCH TO HAVE TWO PAIR OF AUXILIARY CONTACTS FOR INDICATION. REFER TO TRACTION POWER DRAWINGS AND SPECIFICATIONS FOR DETAILS.
- SWITCH BOXES SHOWN STANDING ON SIDEWALK FACING STREET. FOR CENTER POLES, SWITCH BOXES TO BE PARALLEL TO TRACKS.
- SWITCH AND BOX DIMENSIONS TO BE AS SMALL AS POSSIBLE. CONTRACTOR TO SUBMIT DESIGN OF SWITCH FOR APPROVAL BEFORE ORDERING.

BASIS OF DESIGN				
ITEM NO.	QTY.	DESCRIPTION	SUPPLIER	PART NUMBER
1	A/R	MESSENGER HANGER LASHING TIE	T & B	TYM5418X
2	A/R	DISCONNECT SWITCH, POLE MOUNT	MAC	XXX
3	A/R	CLAMP EAR FOR FEEDER TAP CABLE	MAC	D0445-01
4	A/R	250 KCMIL INSULATED FEEDER CABLE	-	2,000 V
6	A/R	POLE CLAMP	MAC	XXX
8	AR	THREADED ROD, 5/8" X 11" LONG	-	-
9	AR	HEX NUT, 5/8", WITH LOCKWASHER	-	-
11	AR	CABLE BUSHING NON-CONDUCTIVE	-	-

NOTE: CONTRACTOR MAY USE PARTS LISTED ABOVE OR APPROVED EQUAL.

REV	DATE	DESCRIPTION	DESIGNED BY	PFW
			CHECKED BY	BP
			DRAWN BY	PFW
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022			DATE	12/23/2022



ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

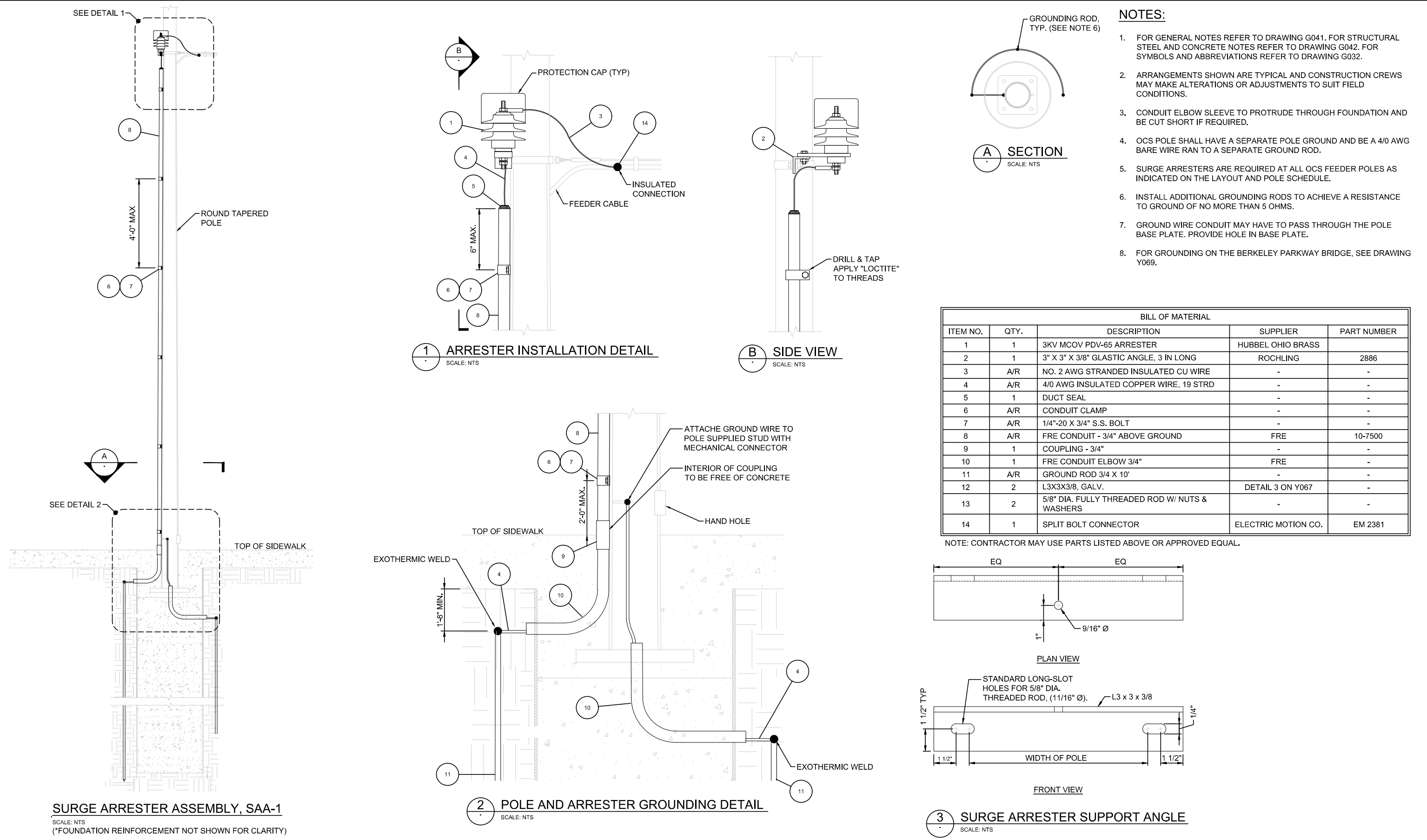
The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

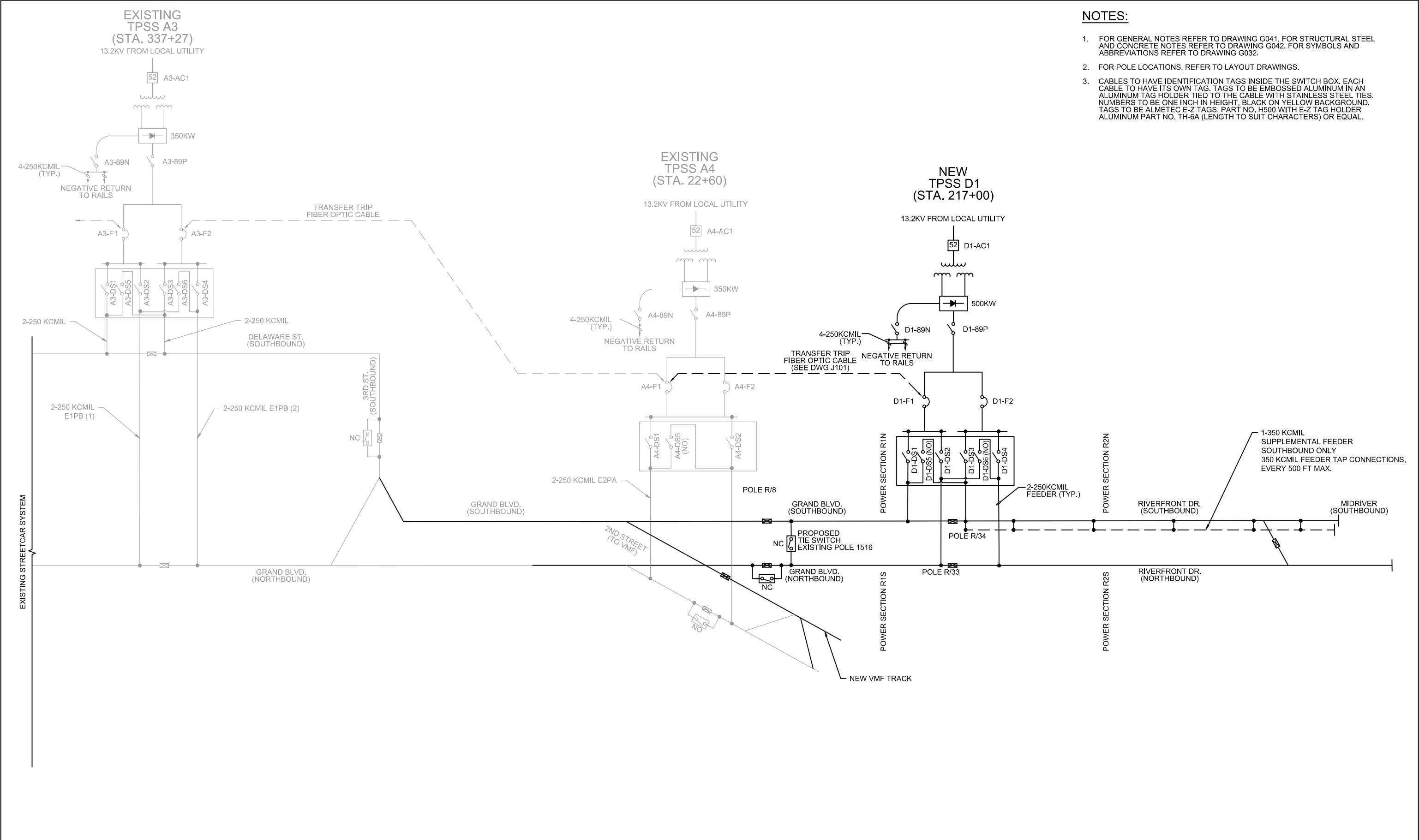
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
SWITCHING AND FEEDER ASSEMBLIES
FEEDER TAP DETAILS

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: Y066.dwg	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y066	SHEET NO.: 369

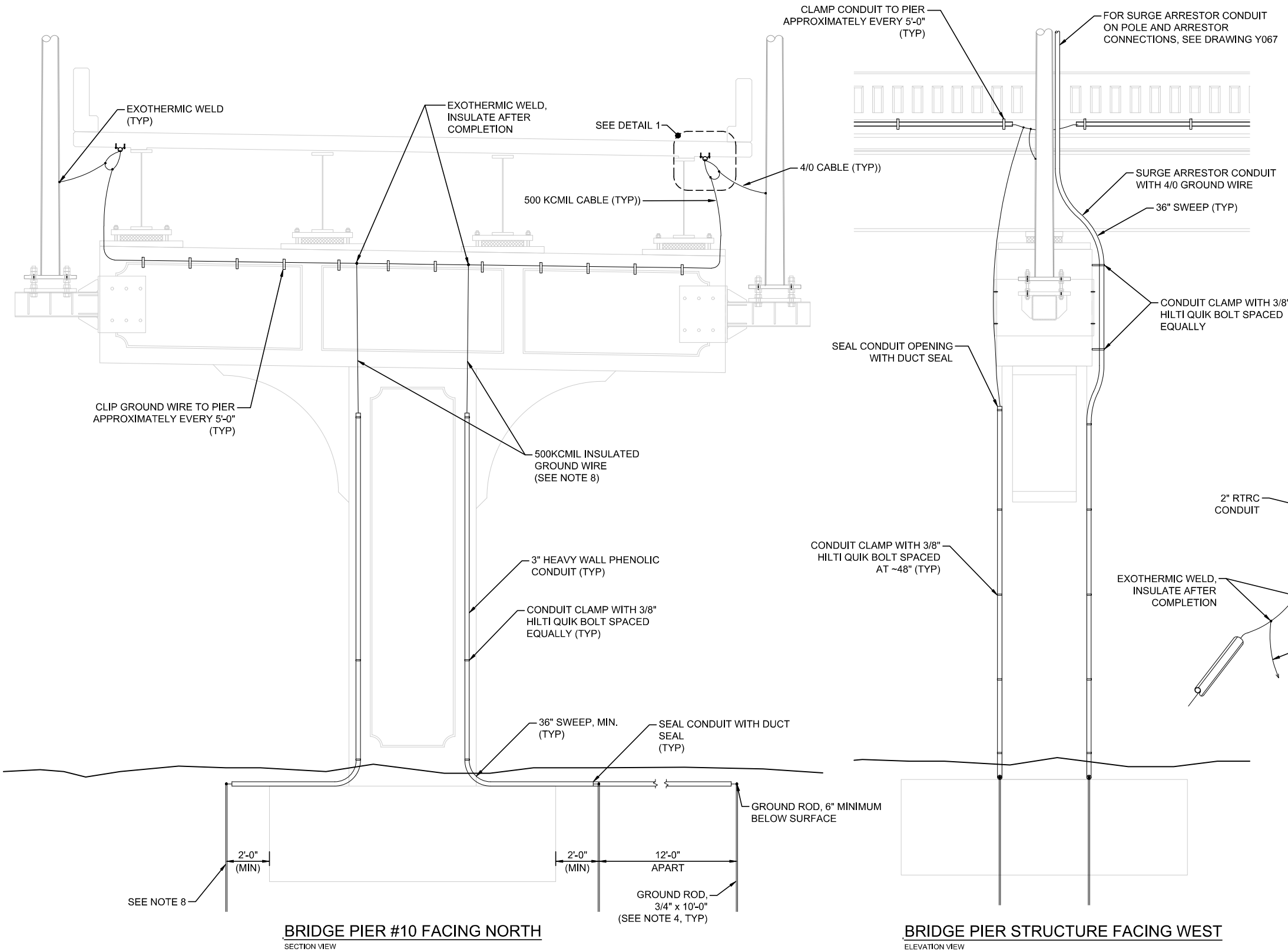


REV	DATE	DESCRIPTION	DESIGNED BY	PFW	RideKC STREETCAR 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856 12/22/2022 BHANUVADAN K PARIKH - ENGINEER LICENSE NO. 2021046193	ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	BP		FILENAME: Y067.dwg				
			DRAWN BY	PFW		CONTRACT NO.: CONTRACT NO. ###				
			CHECKED BY	BP		VOLUME: 1				
			APPROVED BY	NKS		DRAWING NO.: Y067				
PLOT DATE: 12/21/2022			3:01:21 PM		DATE	12/23/2022	NOT FOR CONSTRUCTION		SHEET NO.: 370	



- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - FOR POLE LOCATIONS, REFER TO LAYOUT DRAWINGS.
 - CABLES TO HAVE IDENTIFICATION TAGS INSIDE THE SWITCH BOX. EACH CABLE TO HAVE ITS OWN TAG. TAGS TO BE EMBOSSED ALUMINUM IN AN ALUMINUM TAG HOLDER TIED TO THE CABLE WITH STAINLESS STEEL TIES. NUMBERS TO BE ONE INCH IN HEIGHT, BLACK ON YELLOW BACKGROUND. TAGS TO BE ALMETEC E-Z TAGS, PART NO. H500 WITH E-Z TAG HOLDER ALUMINUM PART NO. TH-6A (LENGTH TO SUIT CHARACTERS) OR EQUAL.

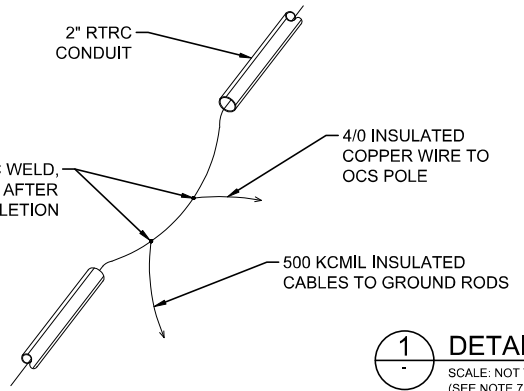
REV	DATE	DESCRIPTION	DESIGNED BY	DC			ISSUE FOR BID	DATE: 12-23-2022	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM SECTIONALIZING DIAGRAM	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Y068.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: SHEET NO.: Y068 371
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PLOT DATE: ----			DATE		12/23/2022		NOT FOR CONSTRUCTION						



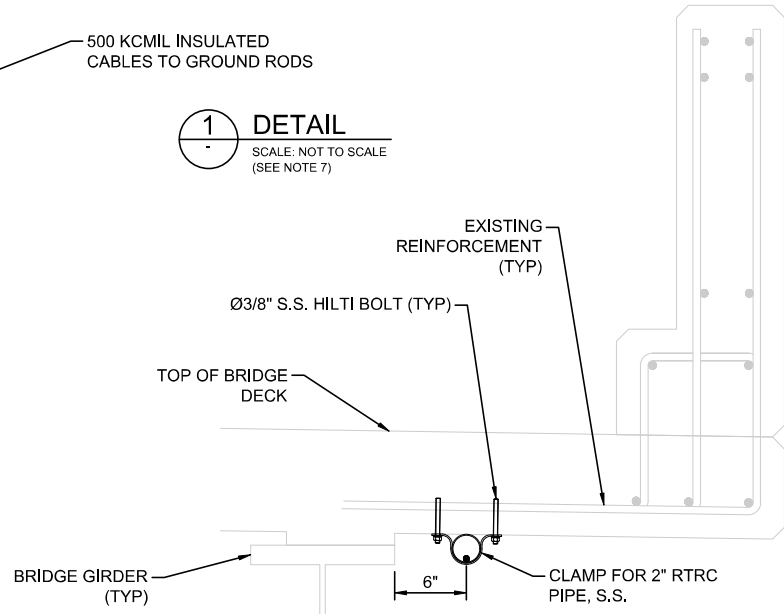
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- BRIDGE POLE GROUND WIRE TO BE 7 STRAND 4/0 TINNED COPPER WIRE WITH LOW SMOKE EPR INSULATION AND POLYOLEFIN JACKET. CABLE RATED FOR 2,000 VOLTS.
- POLE GROUND WIRE SHALL BE SEPARATE FROM ARRESTOR GROUND WIRE AND RUN INDEPENDENTLY TO ITS OWN GROUND ROD. CABLE SHALL BE PROTECTED IN HEAVY WALL PHENOLIC CONDUIT AS SHOWN.
- ALL CONNECTIONS TO BE EXOTHERMICALLY WELDED. JOINTS TO BE FULLY INSULATED. POLE SUPPORT PLATE TO HAVE GALVANIZE COATING GRIND OFF TO BARE METAL FOR WELDING GROUND WIRE. SURFACES OF WELD AND PLATE TO BE CLEANED AND COATED WITH ZINC RICH PAINT.
- EXACT POSITIONING OF GROUND ROD MAY VARY DUE TO FIELD CONDITIONS.
- IF GROUND RESISTANCE FROM POLE SUPPORT TO EARTH MEASURES 25 OHMS OR LESS (AT 68° F), OMIT GROUND WIRE PIGTAIL FROM POLE BASE TO PIER PLATE.
- CONTRACTOR TO FIELD VERIFY LOCATION OF REINFORCEMENT PRIOR TO INSTALLATION OF THREADED BOLTS.
- PROVIDE ENOUGH SLACK AT EXPANSION JOINTS (PIER 2, 5, 8, 11 AND PIER 12) TO ACCOMMODATE BRIDGE DECK MOVEMENTS.
- GROUNDING INCLUDES REDUNDANT GROUND WIRE AND GROUND ROD IN CASE OF AN ELECTRICAL FAILURE.
- SUPPORT 500 KCMIL INSULATED GROUND CABLE TO THE CONCRETE FACE WITH WIRE CLIPS EVERY 3 FEET.
- COORDINATE INSTALLATION OF SURGE ARRESTOR GROUND WIRE WITH OTHER CABLES AND WIRES AT PIER LOCATION FOR BEST FIT.
- ALL BOLTING AND SUPPORT HARDWARE TO BE STAINLESS STEEL.

1 DETAIL
SCALE: NOT TO SCALE
(SEE NOTE 7)



2 DETAIL
SCALE: NOT TO SCALE



REV	DATE	DESCRIPTION	DESIGNED BY	GK
			CHECKED BY	BP
			DRAWN BY	GK
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/21/2022 3:02:06 PM			DATE	12/23/2022



ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

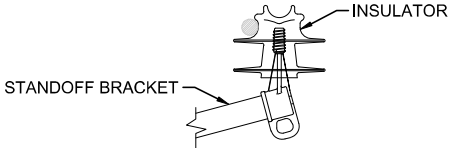
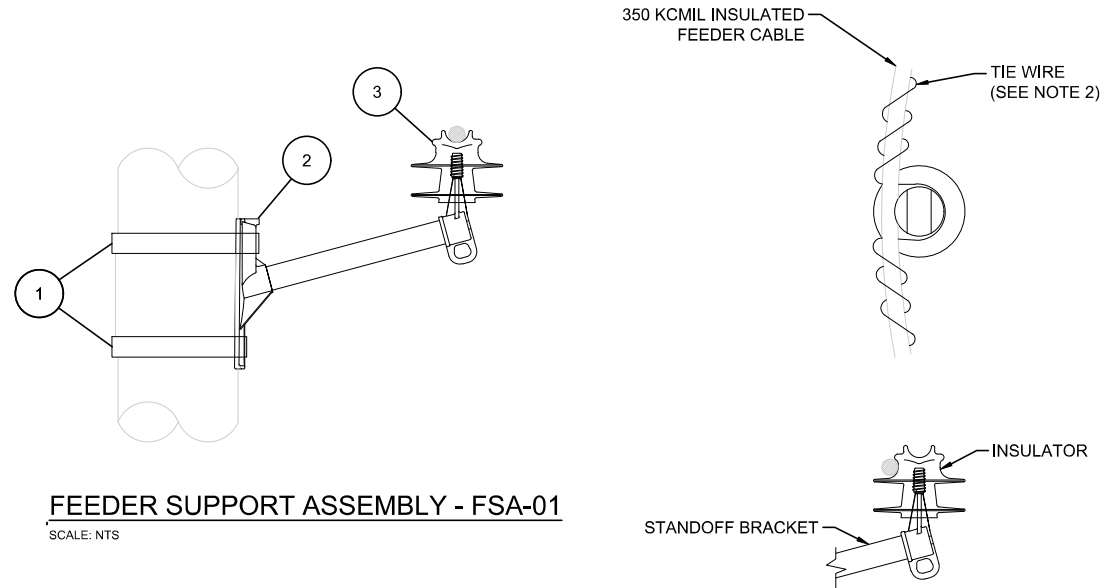
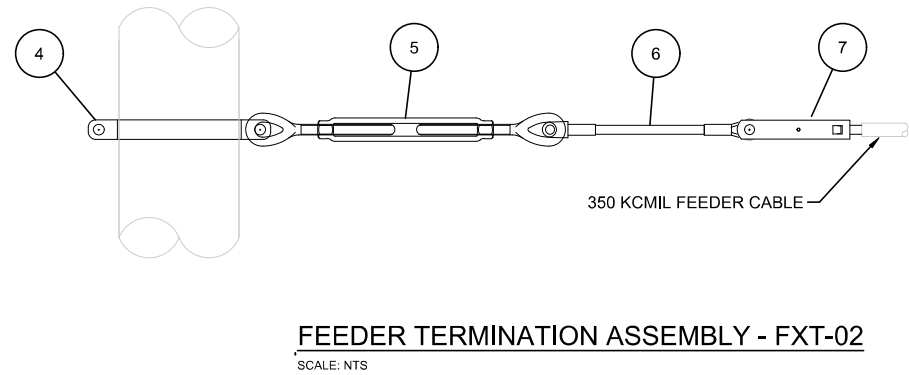
The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
POLE GROUND WIRE INSTALLATION
GRAND BOULEVARD VIADUCT PIERS

SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: Y069.dwg	
CONTRACT NO.: CONTRACT NO. ###	
VOLUME: 1	
DRAWING NO.: Y069	SHEET NO.: 372



BILL OF MATERIALS			
ITEM NO.	DESCRIPTION	SUPPLIER	PART NUMBER
1	POLE BAND, 1" X 0.044", SS TYPE 201, WITH BUCKLE	BAND-IT	G43199
2	STANDOFF BRACKET	HUBBLE	1SBH18V1
3	INSULATOR	HENDRIX	HPI-25J-02
4	POLE CLAMP	SEE DRAWING Y044	
5	TURNBUCKLE, 7/8 X 12	CROSBY	HG-226
6	FIBERGLASS ROD STRAIN INSULATOR (CLEVIS AND EYE AT 90°)	MACLEAN POWER SYSTEM	GCTE15/18
7	FORKED COLLAR SOCKET FOR 350 KCMIL CABLE	TRANSTECH/AF	102016
8	CONNECTOR, 350 KCMIL TO 350 KCMIL	FARGO	GC-5035
9	350 INSULATED FEEDER TAP CABLE, 2 KV	-	-
10	INSULATED PIPE-WIRE CLAMP	MAC	D3040-01
11	CLAMP EAR FOR FEEDER TAP CABLE	MAC	D0445-01

- NOTES:**
1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 2. FEEDER CABLES SHALL BE SECURED TO THE INSULATORS WITH #6 SOFT ANNEALED INSULATED TIE WIRES. FOR CABLES SITTING ON TOP OF INSULATORS, THE BRIDLE TOP GROOVE TIE SHALL BE USED. FOR CABLES ON CURVES SITTING ON THE SIDE INSULATOR, THE LOOPED WESTERN UNION SIDE GROOVE TIE SHALL BE USED.

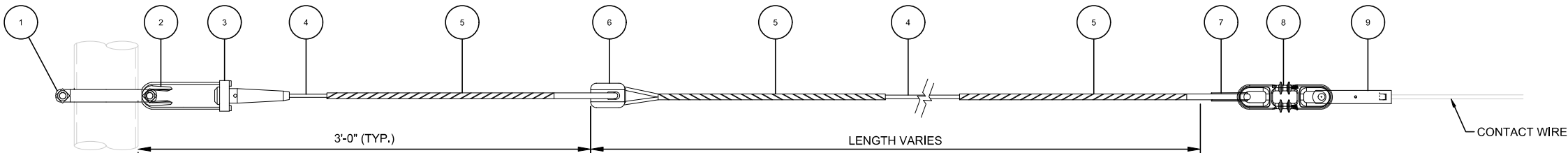
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM SWITCHING AND FEEDER ASSEMBLIES FEEDER TAP DETAILS	SCALE FOR 22"x34": SCALE
			CHECKED BY	BP				HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS		FILENAME: Y070.dwg
			DRAWN BY	GK			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270		CONTRACT NO.: CONTRACT NO. ###
			CHECKED BY	BP						VOLUME: 1
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										SHEET NO.: 373
PLOT DATE: 12/21/2022			3: 45: 24 PM		DATE	12-23-2023	NOT FOR CONSTRUCTION			

NOTES:

1.
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.

2.
- WHERE CLEARANCE RESTRICTIONS DON'T ALLOW THE USE OF MULTIPLE PREFORMS, SUBSTITUTE WITH A STRANDVISE.

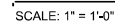
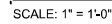
BILL OF MATERIALS				
ITEM	QTY.	DESCRIPTION	SUPPLIER	PART NUMBER
1	1	POLE CLAMP	MAC	SEE DWG. Y044
2	1	THIMBLE, 5/8" OPEN PATTERN	CROSBY	1037611
3	1	STRANDVISE	MCLEAN	5201
4	A/R	5/16" STEEL SPAN WIRE	ASTM A475	EHS
5	3	5/16" PREFORMED END FITTING	PREFORMED LINE PRODUCTS	GDE-2106
6	1	JB PORCELAIN INSULATOR	MACLEAN	DP54-3
7	1	5/16" THIMBLE	CROSBY	103738
8	1	INSULATOR - LOOP	MAC	D4069-01
9	1	DEADEND CLAMP FOR GROOVED CW	FLURY	610.047.000



FIXED TERMINATION ASSEMBLY FXT-1

SCALE: NTS

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	BP						FILENAME: Y071.dwg	
			DRAWN BY	PFW			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			CONTRACT NO.: CONTRACT NO. ###	
			CHECKED BY	BP						VOLUME: 1	
			APPROVED BY	NKS			The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270			DRAWING NO.:	SHEET NO.:
PLOT DATE: 12/21/2022			4:26:30 PM				DATE: 12/23/2022	NOT FOR CONSTRUCTION			Y071



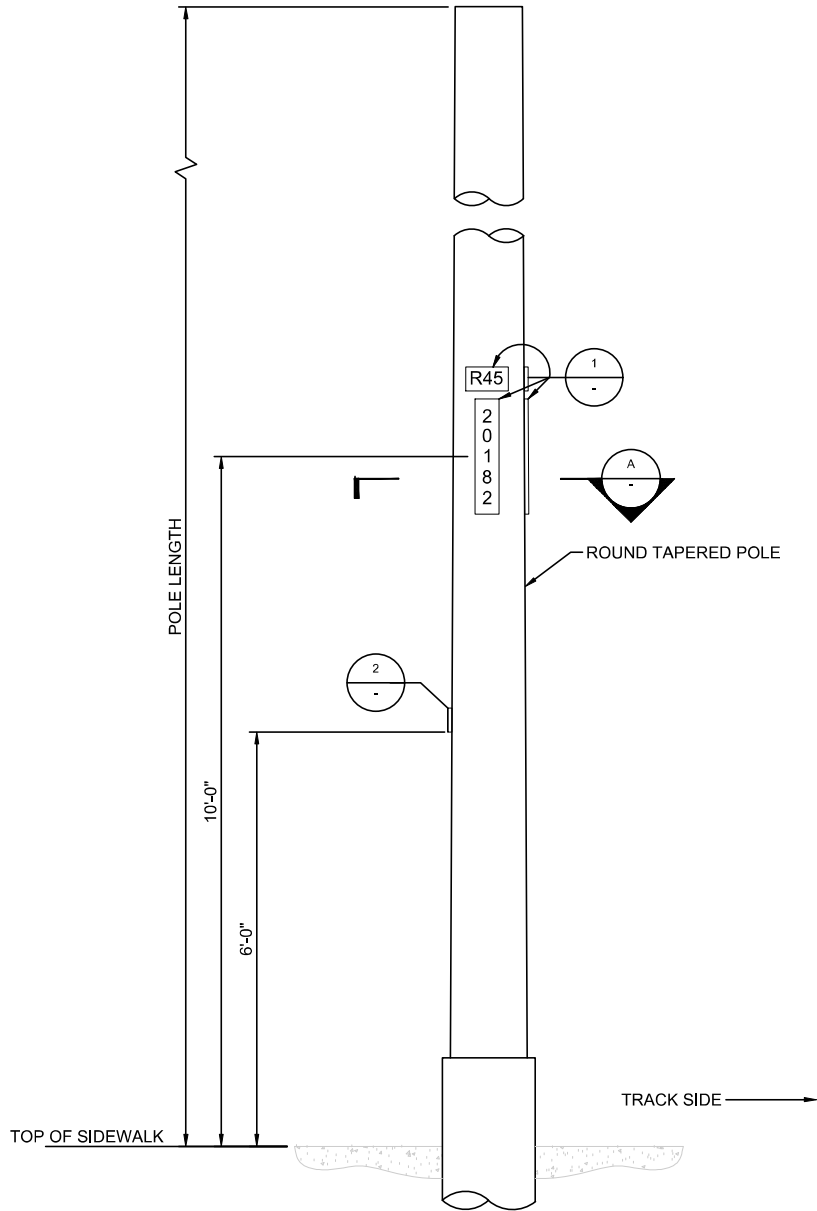
*CONTRACTOR TO DETERMINE DIAMETER REQUIREMENTS

-

803207

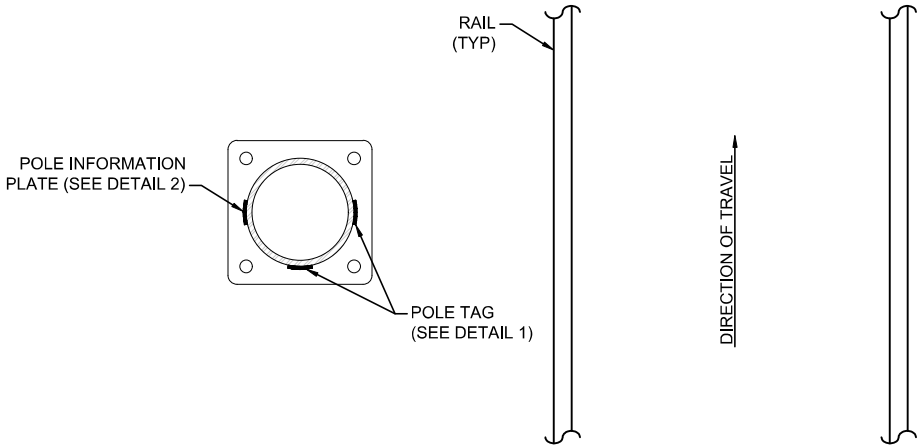
NOTES:

- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
- POLE TAGS SHALL BE REFLECTIVE SELF ADHESIVE MARKERS, BLACK LETTERS ON WHITE BACKGROUND. NUMBERS TO BE 2' HIGH AND TEXT TO BE HELVETICA MEDIUM.
- SIDE POLES TO HAVE NUMBERS FACING THE TRACK AND DIRECTION OF TRAFFIC.
- CENTER POLES IN LOCATIONS WITH TRACKS ON EACH SIDE TO HAVE TWO SETS OF NUMBERS, EACH FACING THEIR RESPECTIVE TRACK.
- FOR POLE NUMBERS, REFER TO THE POLE SCHEDULE ON DRAWINGS Y111 THRU Y112 AND OCS LAYOUTS ON DRAWINGS Y201 THROUGH Y211. NUMBERS WITH R REFER TO NUMERICAL POLE NUMBERS FOR THE RIVERFRONT EXTENSION.
- FOR POLE LENGTHS AND TYPES, REFER TO THE POLE SCHEDULE ON DRAWINGS Y111 THRU Y112 AND OCS LAYOUTS ON DRAWINGS Y201 THROUGH Y211.
- THE PLATE SHALL BE ENGRAVED OR CAST WITH THE FOLLOWING INFORMATION, MANUFACTURER'S NAME, POLE SIZE, DATE MANUFACTURED, SECTION MODULUS OF BUTT SECTION (INCHES CUBED), AND STRENGTH OF STEEL (PSI). TAG SHALL BE 1/4" THICK, GRADE 304 STAINLESS STEEL WELDED TO POLE BUTT ALL AROUND EDGES OF TAG WITH STAINLESS STEEL WELDING ROD. LETTERING SHALL BE OF SUFFICIENT DEPTH, IF ENGRAVED, OR SUFFICIENT HEIGHT, IF CAST, SO THAT THE FINISH OF THE POLE SHALL NOT OBSCURE THE LETTERING.
- BASE DIAMETER OF POLE FOR POLE TAG SHALL NOT INCLUDE CORROSION COLLAR DIMENSION.



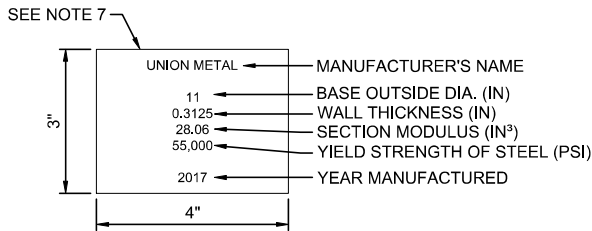
ROUND TUBULAR POLE TAG ARRANGEMENT

SCALE: 1" = 1'-0"



A TAG ARRANGMENT - PLAN VIEW

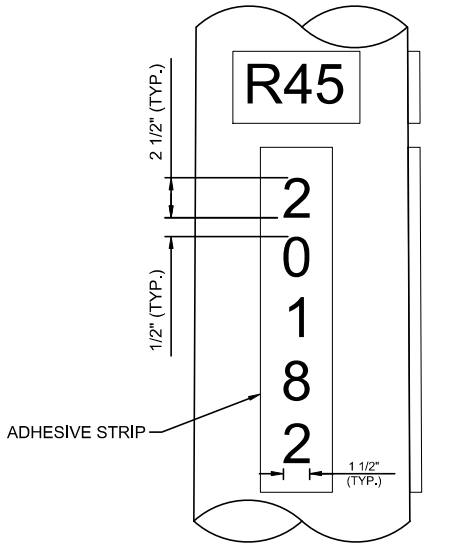
SCALE: 1" = 1'-0"



NOTE: TAG TO CONFORM TO IEEE STANDARD 1630-2012

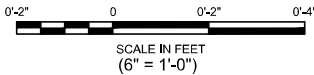
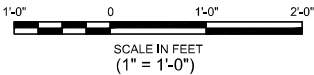
2 POLE INFORMATION PLATE

SCALE: 6" = 1'-0"



1 POLE TAG DETAIL

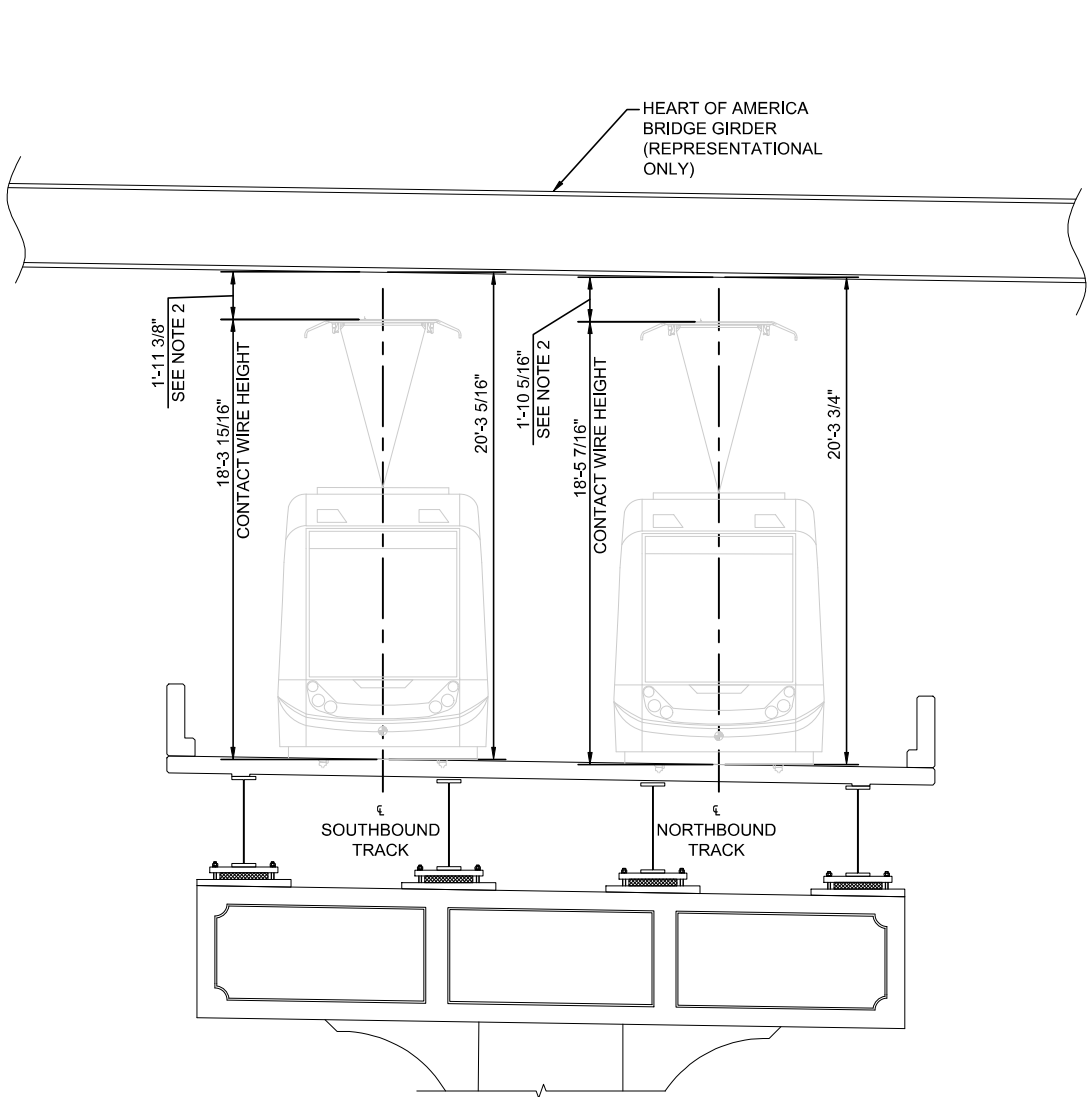
SCALE: NTS



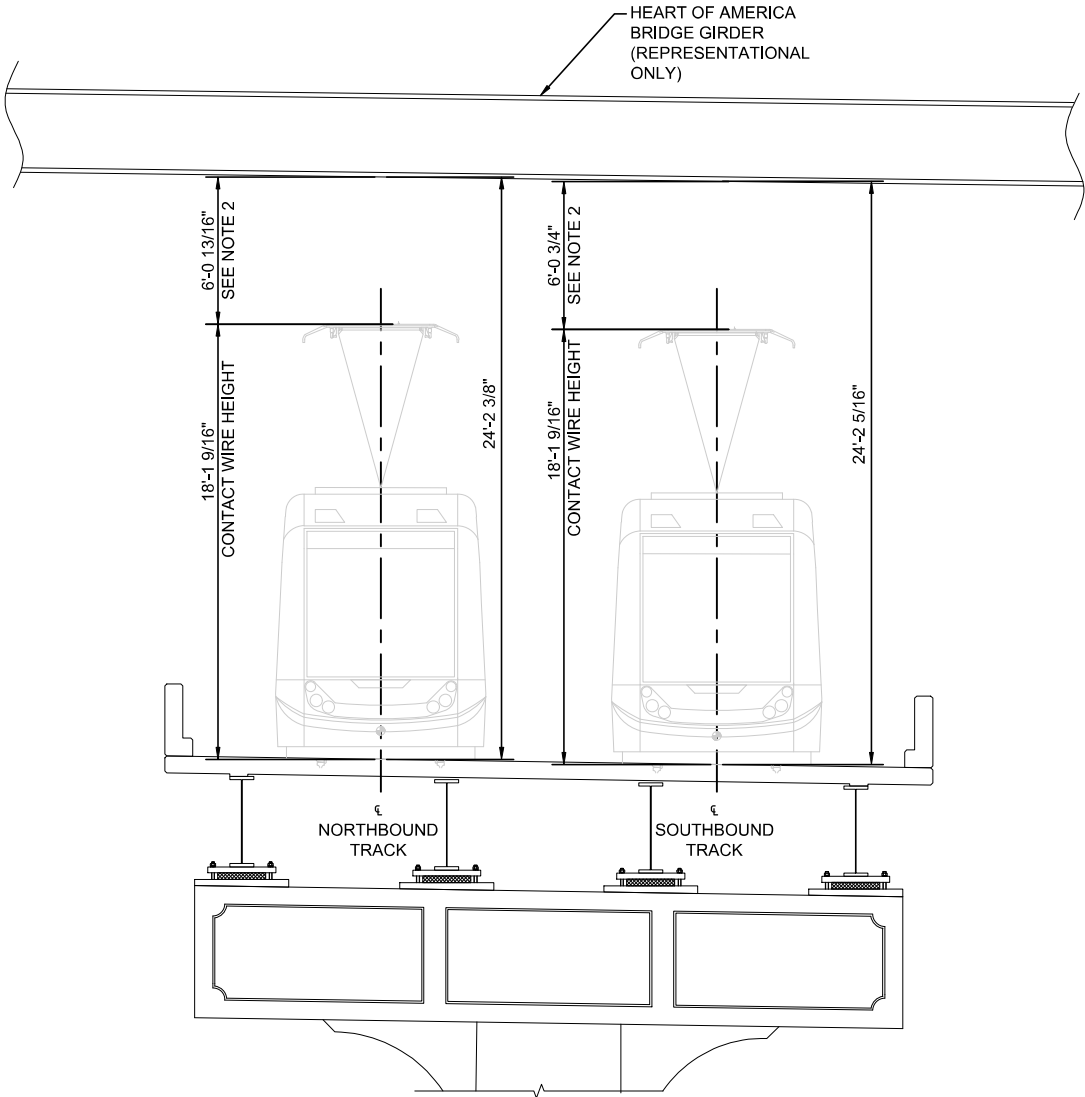
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM MISCELLANEOUS POLE NUMBERING DETAIL	SCALE FOR 22"x34": AS SHOWN FILENAME: Y081.dwg CONTRACT NO.: CONTRACT NO. ### VOLUME: 1 DRAWING NO.: Y081	SHEET NO.: 376
			CHECKED BY	BP									
			DRAWN BY	PFW									
			CHECKED BY	BP									
			APPROVED BY	NKS									
PLOT DATE: 12/21/2022			2:08:23 PM		DATE		12/23/2022		NOT FOR CONSTRUCTION				

NOTES:

1.
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2.
- USE PROTECTION BOARD WHEN DISTANCE BETWEEN TOP OF TROLLEY WIRE AND BOTTOM OF BRIDGE IS 12" OR LESS. REFER TO DRAWING Y065 FOR PROTECTION BOARD DETAILS.

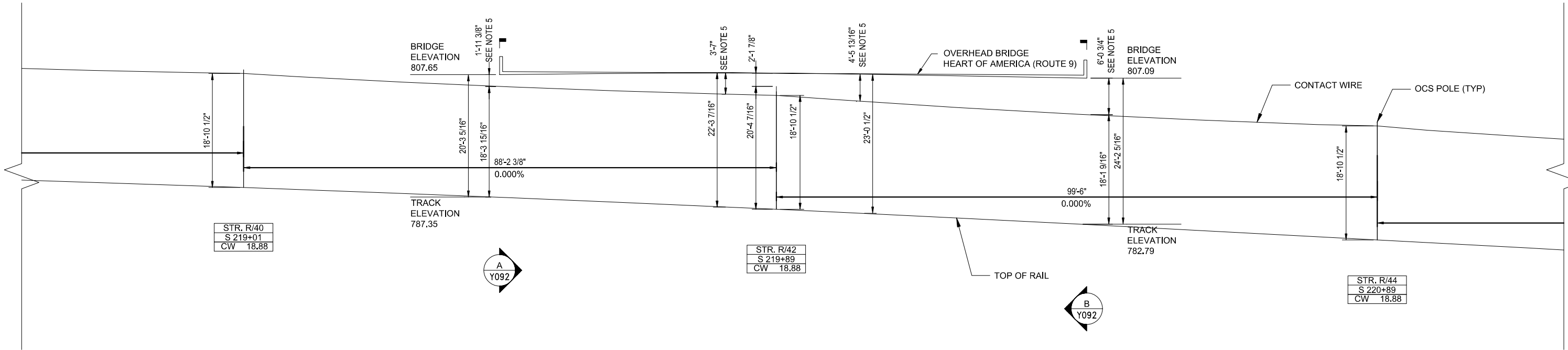


A HEART OF AMERICA BRIDGE STA. N 129+51
SECTION VIEW

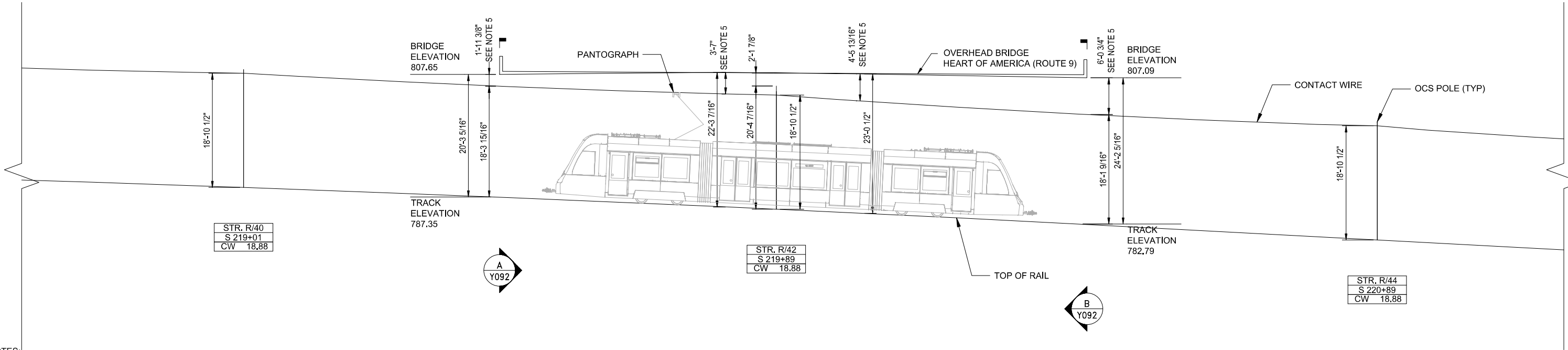


B HEART OF AMERICA BRIDGE STA. N 130+50
SECTION VIEW

REV	DATE	DESCRIPTION	DESIGNED BY	DC			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM CROSS SECTION HEART OF AMERICA BRIDGE	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	BP				HNTB The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 000856			FILENAME: Y092.dwg
			DRAWN BY	DC							CONTRACT NO.: CONTRACT NO. ###
			CHECKED BY	BP							VOLUME: 1
			APPROVED BY	NKS							DRAWING NO.: SHEET NO.:
PLOT DATE: 12/21/2022			2:10:29 PM			DATE	12/23/2022	NOT FOR CONSTRUCTION			Y092 377



SOUTH BOUND WIRE RUN SBT-2
WITHOUT STREETCAR

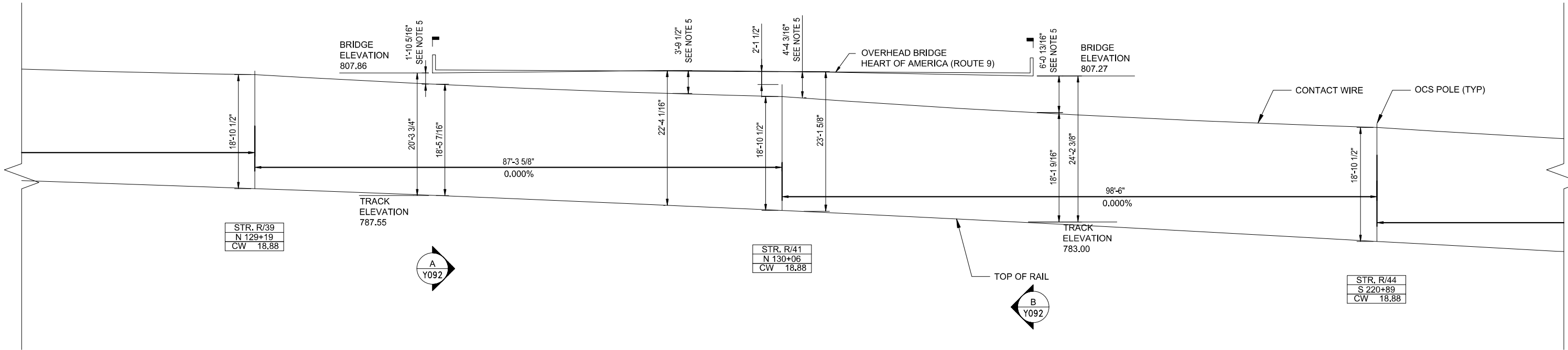


SOUTH BOUND WIRE RUN SBT-2
WITH STREETCAR

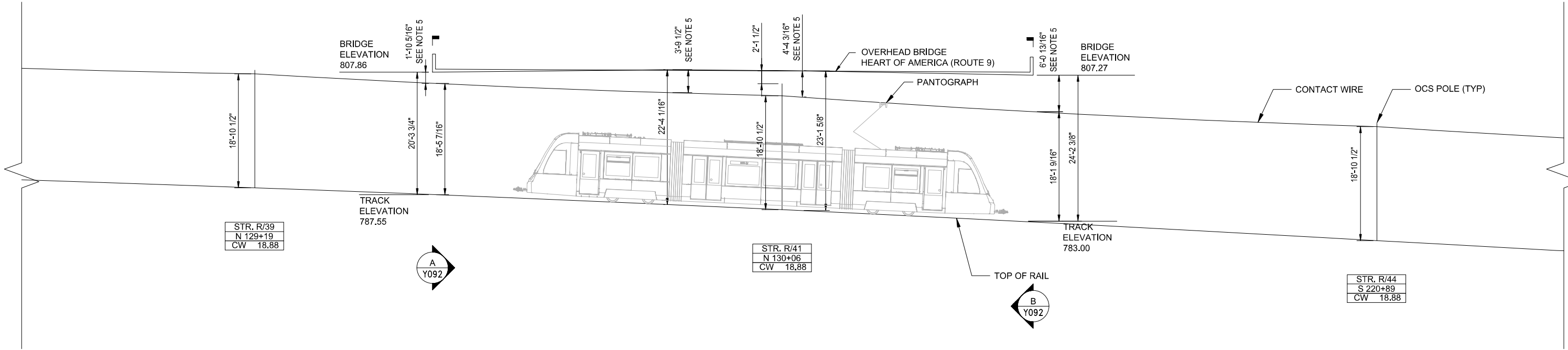
NOTES:

- FOR GENERAL NOTES REFER TO DRAWINGS G020 AND G021.
FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G022.
- ALL CONTACT WIRE HEIGHTS ARE LISTED IN FEET.
- TRACK AND BRIDGE ELEVATION OBTAINED FROM TRACK
PROFILE DRAWINGS.
- IF CONTACT WIRE PROTECTION IS REQUIRED, REFER TO
DRAWING Y065 FOR DETAIL.
- USE PROTECTION BOARD WHEN DISTANCE BETWEEN TOP OF
TROLLEY WIRE AND BOTTOM OF BRIDGE IS 12" OR LESS.
REFER TO DRAWING Y065 FOR PROTECTION BOARD DETAILS.

REV	DATE	DESCRIPTION	DESIGNED BY	DC		 12/22/2022 BHANUVARAN K. PARIKH - ENGINEER LICENSE NO. 2021046193	ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	OVERHEAD CONTACT SYSTEM PROFILES HEART OF AMERICA (1 OF 2)	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	BP			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 300 Apollo Drive Chelmsford, MA 01824 Phone: 978-905-4000 Certificate of Authority: 001270			FILENAME: Y093.dwg
			DRAWN BY	DC							CONTRACT NO.: CONTRACT NO. ###
			CHECKED BY	BP							VOLUME: 1
			APPROVED BY	NKS							DRAWING NO.: Y093
PLOT DATE: 12/22/2022			7: 25: 03 AM		DATE	12/23/2022	NOT FOR CONSTRUCTION				



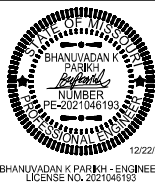
NORTH BOUND WIRE RUN NBT-2
WITHOUT STREETCAR

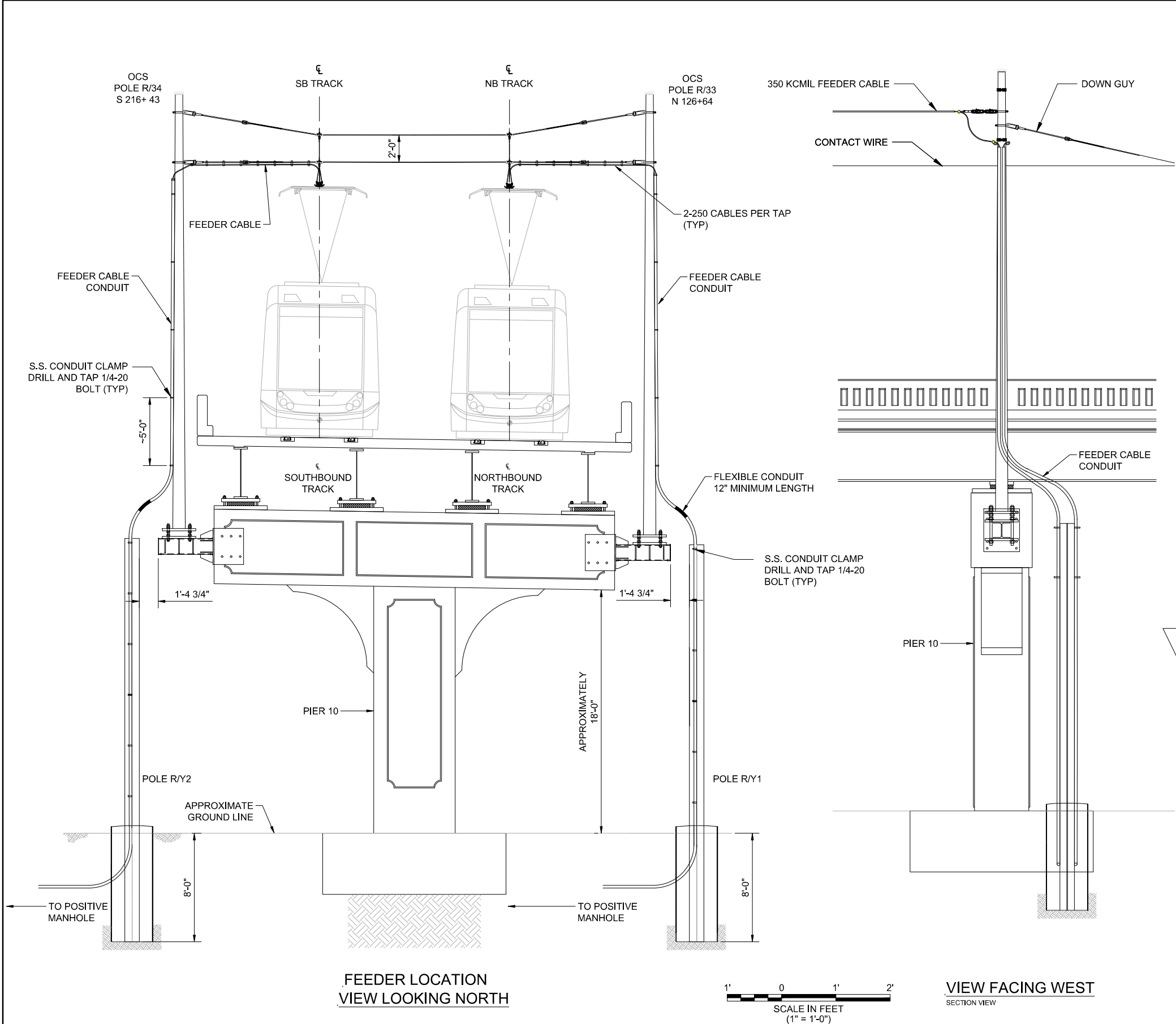


NORTH BOUND WIRE RUN NBT-2
WITH STREETCAR

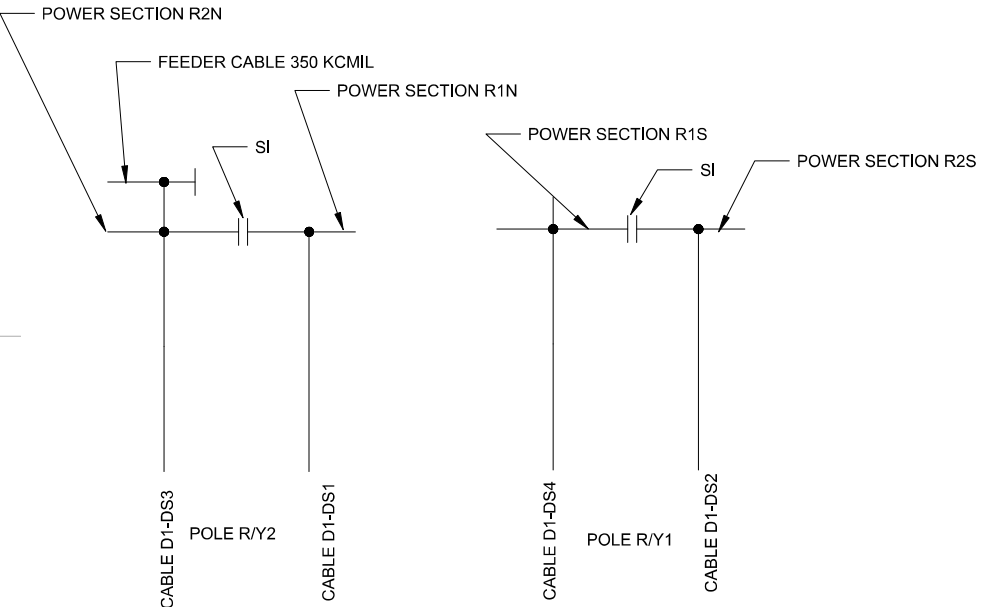
NOTES:

- FOR GENERAL NOTES REFER TO DRAWINGS G020 AND G021.
FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G022.
- ALL CONTACT WIRE HEIGHTS ARE LISTED IN FEET.
- TRACK AND BRIDGE ELEVATION OBTAINED FROM TRACK
PROFILE DRAWINGS.
- IF CONTACT WIRE PROTECTION IS REQUIRED, REFER TO
DRAWING Y065 FOR DETAIL.
- USE PROTECTION BOARD WHEN DISTANCE BETWEEN TOP OF
TROLLEY WIRE AND BOTTOM OF BRIDGE IS 12" OR LESS.
REFER TO DRAWING Y065 FOR PROTECTION BOARD DETAILS.

REV	DATE	DESCRIPTION	DESIGNED BY	DC			ISSUE FOR BID	DATE: 12-23-2022	 The HNTB COMPANIES INFRASTRUCTURE SOLUTIONS 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	BP							FILENAME: Y094.dwg	
			DRAWN BY	DC							CONTRACT NO.: CONTRACT NO. ###	
			CHECKED BY	BP							VOLUME: 1	
			APPROVED BY	NKS							DRAWING NO.: Y094	SHEET NO.: 379
PLOT DATE: 12/22/2022			7:24:02 AM		DATE	12/23/2022	NOT FOR CONSTRUCTION		OVERHEAD CONTACT SYSTEM PROFILES HEART OF AMERICA (2 OF 2)			



- NOTES:**
- FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
 - CONDUITS TO BE 4" RTRC EXTERIOR GRADE HEAVY WALL TYPE. COUPLINGS TO BE EPOXY SLEEVES.
 - CONDUITS TO HAVE A FLEXIBLE CONNECTION BETWEEN POLES TO FACILITATE VIBRATION.
 - CABLE TO BE RUN FROM TOP OF CONDUIT RUN AND PULLED DOWN INTO CONDUITS TO DECREASE TENSION AND SIDEWALL PRESSURE.
 - RELOCATE ANY DRAIN PIPES OR ELECTRICAL CONDUIT AND WIRING WHERE OCS POLE SUPPORT IS MOUNTED ON THE BRIDGE PIER.
 - POLES TO WHICH CONDUITS ARE MOUNTED ARE TO BE 12 x 65 WIDE FLANGE BEAMS, HDG, SET DIRECTLY IN THE EARTH. CONDUITS TO BE FITTED INTO FOUNDATION BEFORE CONCRETE POUR.
 - DIMENSIONS ARE APPROXIMATE AND CONTRACTOR TO DETERMINE BEST FIT IN THE FIELD AND ADJUST AS REQUIRED.
 - REFER TO LAYOUT DRAWINGS FOR SPAN WIRE AND FEEDER CABLE ATTACHMENT HEIGHTS ON POLES.
 - ALL CONDUIT OPENINGS TO BE SEALED WITH ROXTEC RS SEAL. CONDUIT SUPPORT DETAILS TO BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL. ALL MOUNTING MATERIAL INCLUDING BOLTS, NUTS, WASHERS, AND LOCKWASHERS TO BE STAINLESS STEEL.
 - EACH FEEDER CABLE TO BE EQUIPPED WITH SURGE ARRESTORS AT THE TOP OF THE BRIDGE POLE. GROUND WIRE TO BE RUN DOWN POLES IN PHENOLIC CONDUIT TO SEPARATE GROUND ROD.



REV	DATE	DESCRIPTION	DESIGNED BY	PFW	ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	BP	HDR	HDR Engineering, Inc.		AS NOTED
			DRAWN BY	PFW		The HNTB COMPANIES		FILENAME:
			CHECKED BY	BP		INFRASTRUCTURE SOLUTIONS		Y097.dwg
			APPROVED BY	NKS		10450 Holmes Road		CONTRACT NO.:
						Suite 600		CONTRACT NO. ##
						Kansas City, MO 64131-3471		VOLUME:
						816-360-2700		1
						Certificate of Authority: 000856		DRAWING NO.:
								SHEET NO.:
								Y097
								380

NOTES:

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. FOR POLE DETAILS SEE DRAWINGS Y021 TO Y023.
3. FOR FOUNDATION DETAILS SEE DRAWINGS Y031 TO Y036.
4. FOR TRAFFIC SIGNAL CONDUIT AND MAST ARM DETAILS SEE TRAFFIC SIGNAL DRAWINGS.
5. FOR DISCONNECT SWITCH ARRANGEMENT SEE DWG Y066. FOR SECTIONALIZING DIAGRAM SEE DWG Y068.
6. FOR POLE NUMBER TAG DETAILS, SEE DRAWING Y081.
7. FOR RAKE DIRECTION, REFER TO BASE MOMENT ARROWS SHOWN ON OCS LAYOUT PLANS.
8. IN CASE DISCREPANCIES ARE FOUND BETWEEN THE POLE SCHEDULE ON DRAWINGS Y111 AND Y112 AND THE LAYOUT PLANS, THE POLE SCHEDULE TAKES PRECEDENCE.

POLE & FOUNDATION INSTALLATION SCHEDULE														
POLE NO.	ALIGNMENT	STATION SB	STATION NB	OFFSET SB (FT)	OFFSET NB (FT)	EASTING	NORTHING	STRUCTURE TYPE	POLE TYPE	POLE LENGTH (FT)	FOUNDATION TYPE	FOUNDATION EMBEDMENT LENGTH	POLE COLOR	MISCELLANEOUS
R/25	NB	-	123+08	-	10.27	-	-	OCS	P-1B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/28	SB	213+86	-	9.92	-	-	-	OCS	P-1B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/27	NB	-	123+92	-	10.17	-	-	OCS	P-1B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/30	SB	214+57	-	9.72	-	-	-	OCS	P-3B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/29	NB	-	124+62	-	10.25	-	-	OCS	P-1B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/32	SB	215+26	-	9.99	-	-	-	OCS	P-3B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/31	NB	-	125+47	-	10.44	-	-	OCS	P-3B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/34	SB	216+43	-	10.44	-	-	-	OCS + FD	P-5B	34.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/33	NB	-	126+64	-	10.00	-	-	OCS + FD	P-5B	34.0	-	-	DK. BRZ.	OCS ON BRIDGE
RY1		-	-	-	-	2766194.77	1073323.88	OCS + FD	W 12x65	30.0	FD-3FA	12'-0"	GALV.	
RY2		-	-	-	-	2766165.04	1073351.91	OCS + FD	W 12x65	30.0	FD-3FA	12'-0"	GALV.	
R/36	SB	217+35	-	10.60	-	-	-	OCS	P-4B	34.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/35	NB	-	127+50	-	10.28	-	-	OCS	P-4B	34.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/38	SB	218+19	-	10.70	-	-	-	OCS	P-4B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/37	NB	-	128+33	-	10.48	-	-	OCS	P-2B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/40	SB	219+01	-	10.01	-	-	-	OCS	P-3B	32.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/39	NB	-	129+19	-	10.78	-	-	OCS	P-3B	30.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/42	SB	219+89	-	10.61	-	-	-	OCS	P-2B	30.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/41	NB	-	130+06	-	10.45	-	-	OCS	P-2B	30.0	-	-	DK. BRZ.	OCS ON BRIDGE
R/44	SB	220+89	-	16.43	-	2766509.75	1073644.96	OCS	P-4	54.0	FD-4D	-	DK. BRZ.	
R/46	SB	221+89	-	16.80	-	2766597.32	1073696.16	OCS	P-4	48.0	FD-4D	-	DK. BRZ.	
R/48	SB	222+90	-	16.78	-	2766687.96	1073741.43	OCS	P-3	44.0	FD-4C	-	DK. BRZ.	
R/50	SB	223+79	-	16.79	-	2766771.05	1073777.03	OCS	P-3	42.0	FD-4C	-	DK. BRZ.	
R/52	SB	224+80	-	16.43	-	2766866.48	1073811.03	OCS	P-3	40.0	FD-4C	-	DK. BRZ.	
R/54	SB	225+81	-	15.00	-	2766964.16	1073839.31	OCS	P-1	26.0	FD-1A	9'-0"	GALV.	
R/53	NB	-	135+91	-	11.22	2766974.81	1073798.43	OCS + SL	P-1L	34.0	FD-1LA	10'-6"	GALV.	
R/56	SB	226+47	-	18.58	-	2767015.23	1073869.92	OCS	P-1	26.0	FD-1A	10'-6"	GALV.	
R/55	NB	-	136+31	-	16.36	2767015.93	1073809.40	OCS	P-1	24.0	FD-1A	9'-0"	GALV.	
R/57	NB	-	136+66	-	41.18	2767063.90	1073812.01	OCS	P-1	26.0	FD-1A	10'-6"	GALV.	
R/58	SB	226+87	-	9.00	-	2767049.19	1073889.09	OCS + SL	P-3L	34.0	FD-2LC	10'-6"	GALV.	
R/59	NB	-	137+06	-	12.00	2767074.00	1073862.48	OCS + T	P-4	26.0	FD-1D	12'-0"	GALV.	
R/60	SB	227+37	-	29.87	-	2767080.36	1073939.48	OCS	P-1	26.0	FD-1A	9'-0"	GALV.	
R/61	NB	-	137+69	-	7.21	2767114.77	1073915.25	OCS + T	P-4	28.0	FD-1D	12'-0"	GALV.	
R/61-DG	NB	-	137+47	-	7.21	2767095.30	1073905.00	-	-	-	FG-01	12'-0"	GALV.	
R/62	SB	228+20	-	7.21	-	2767175.59	1073934.29	OCS + SL	P-1L	34.0	FD-1LA	9'-0"	GALV.	
R/63	SB	229+08	-	7.00	-	2767260.07	1073958.01	OCS	P-1	28.0	FD-1A	9'-0"	GALV.	
R/63-DG	SB	229+30	-	7.00	-	2767281.25	1073963.95	-	-	-	FG-01	12'-0"	GALV.	
R/64	SB	230+02	-	7.00		2767350.68	1073983.45	OCS + SL	P-1L	34.0	FD-1LA	9'-0"	GALV.	
R/65	SB	231+02		7.00		2767446.97	1074010.48	OCS	P-1	28.0	FD-1A	9'-0"	GALV.	
R/66	SB	232+02	-	7.00	-	2767543.24	1074037.51	OCS + SL	P-1L	34.0	FD-1LA	9'-0"	GALV.	
R/67	SB	233+02	-	7.00	-	2767639.66	1074064.60	OCS	P-1	28.0	FD-1A	9'-0"	GALV.	
R/68	SB	233+87	-	7.00	-	2767720.99	1074090.09	OCS + SL	P-2L	34.0	FD-2LB	10'-6"	GALV.	
R/69	SB	234+72	-	7.00	-	2767800.72	1074120.38	OCS	P-2	28.0	FD-1B	10'-6"	GALV.	
R/70	SB	235+69	-	7.00	-	2767889.37	1074159.32	OCS + SL	P-2L	34.0	FD-2LB	10'-6"	GALV.	
R/71	SB	236+49	-	7.00	-	2767962.28	1074191.83	OCS	P-2	28.0	FD-1B	10'-6"	GALV.	
R/72	NB	-	147+44	-	7.24	2768036.14	1074225.04	OCS + SL	P-5L	34.0	FD-1LC	12'-6"	GALV.	
R/72-DG	NB	-	147+71	-	7.24	2768060.42	1074236.85	-	-	-	FG-01	10'-6"	GALV.	
R/73	NB	-	148+32	-	11.64	2768114.08	1074265.91	OCS	P-1	26.0	FD-1A	10'-6"	GALV.	
R/74	NB	-	149+24	-	12.30	2768193.39	1074310.21	OCS + SL	P-1L	34.0	FD-1LA	9'-0"	GALV.	
R/75	NB	-	150+41	-	12.27	2768295.91	1074367.25	OCS + SL	P-1L	34.0	FD-1LA	9'-0"	GALV.	
R/76	NB	-	151+32	-	12.27	2768375.22	1074411.35	OCS	P-1	26.0	FD-1A	9'-0"	GALV.	
R/77	NB	-	152+32	-	12.27	2768462.61	1074459.98	OCS	P-1	24.0	FD-1A	10'-6"	GALV.	
R/77-DG	NB	-	152+53		12.27	2768480.519	1074469.948	-	-	-	FG-01	10'-6"	GALV.	

STRUCTURE TYPE LEGEND:

- OCSOCS POLES
- FDFEEDER POLES
- SLSTREETLIGHTS
- TTRAFFIC SIGNALS
- PTPEDESTRIAN TRAFFIC SIGNALS
- CCCTV CAMERAS

REV

DATE

DESCRIPTION

DESIGNED BY

PFW

CHECKED BY

BP

DRAWN BY

CA

CHECKED BY

BP

APPROVED BY

NKS

PLOT DATE:

12/22/2022

11:25:23 AM

DATE

12/23/2022





ISSUE FOR BID

DATE: 12-23-2022



HDR Engineering, Inc.



The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856



The HNTB COMPANIES
INFRASTRUCTURE SOLUTIONS
300 Apollo Drive
Chelmsford, MA 01824
Phone: 978-905-4000
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OVERHEAD CONTACT SYSTEM
STRUCTURE SCHEDULE
POLE AND FOUNDATION SCHEDULE
(SHEET 2 OF 2)

SCALE FOR 22"x34":
NO SCALE

FILENAME:
Y111-112.dwg

CONTRACT NO.:
CONTRACT NO. ###

VOLUME:
1

DRAWING NO.:
Y112

SHEET NO.:
382



REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		1:12:08 PM

DESIGNED BY	PFW
CHECKED BY	BP
DRAWN BY	DC
CHECKED BY	BP
APPROVED BY	NKS
DATE	12-23-2022



ISSUE FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	HNTB The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OCS LAYOUT PLAN
KEY MAP

SCALE FOR 22"x34": 1" = 150'	FILENAME:
\$FILES\$	CONTRACT NO.:
\$CONTRACT\$	VOLUME:
\$VOLUME\$	DRAWING NO.:
Y198	SHEET NO.: 383

1. FOR GENERAL NOTES REFER TO DRAWING G041. FOR STRUCTURAL STEEL AND CONCRETE NOTES REFER TO DRAWING G042. FOR SYMBOLS AND ABBREVIATIONS REFER TO DRAWING G032.
2. EXISTING CONTACT WIRE ALONG 2ND STREET TO BE CONVERTED TO CONSTANT TENSION.

2. EXISTING CONTACT WIRE ALONG 2ND STREET TO BE CONVERTED TO CONSTANT TENSION.

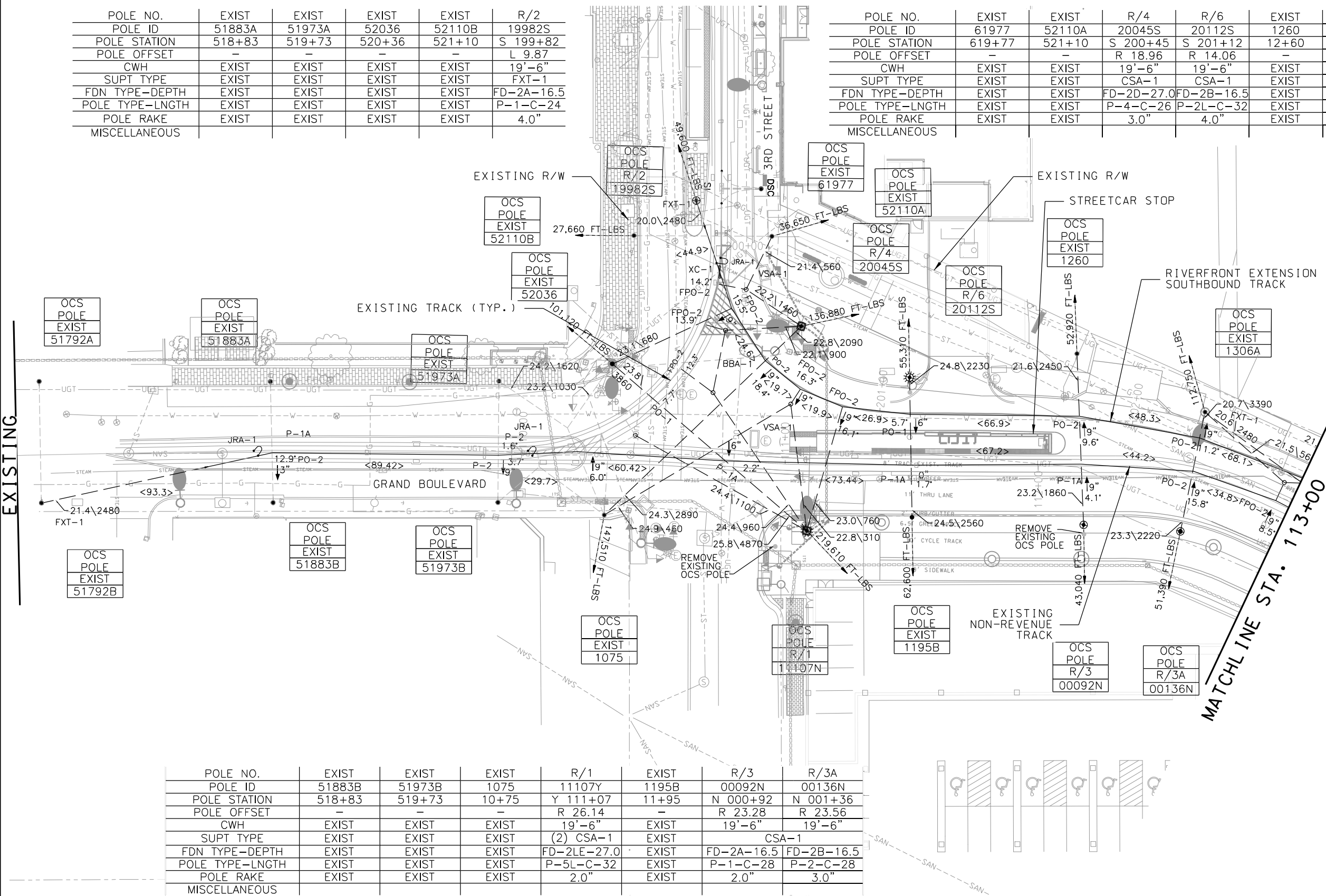
WIRE RUN TABLE					
TENSION LENGTH	POLE	TERMINATION	LENGTH	TERMINATION	POLE
NBT-1	1306A	FXT-1	762'	SPTA-1	R/19
SBT-1	R/2	FXT-1	996'	SPTA-1	R/20
NBT-2	R/15	SPTA-1	970'	FXT-1	R/37
SBT-2	R/16	SPTA-1	985'	FXT-1	R/38
NBT-3	R/33	FXT-1	1256'	SPTA-2	R/63
SBT-3	R/34	FXT-1	1268'	SPTA-2	R/63
NBT-4	R/61	FXT-1	1465'	SPTA-1	R/77
SBT-4	R/61	FXT-1	973'	SPTA-1	R/72
Y-1	1371	FXT-1	596'	SPTA-1	Y/8
Y-2	335	FXT-1	913'	SPTA-1	R/19
Y-3	1573	SPTA-1	621'	MPA	Y/15A
Y-4	R/19	SPTA-1	899'	FXT-1	VMF
XO-1	R/68	SPTA	434'	FXT-1	R/73

REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION OVERHEAD CONTACT SYSTEM MASTER OVERLAP CHART	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	BP			FILENAME: Y199.dwg			
			DRAWN BY	CA			CONTRACT NO.:			
			CHECKED BY	BP			CONTRACT NO. ###			
			APPROVED BY	NKS			VOLUME: 1			
							DRAWING NO.:	SHEET NO.:		
PLOT DATE: 12/21/2022			2: 22: 04 PM				NOT FOR CONSTRUCTION		Y199	384
			DATE 12/23/2022							

POLE NO.	EXIST	EXIST	EXIST	EXIST	R/2
POLE ID	51883A	51973A	52036	52110B	19982S
POLE STATION	518+83	519+73	520+36	521+10	S 199+82
POLE OFFSET	-	-	-	-	L 9.87
CWH	EXIST	EXIST	EXIST	EXIST	19'-6"
SUPT TYPE	EXIST	EXIST	EXIST	EXIST	FXT-1
FDN TYPE-DEPTH	EXIST	EXIST	EXIST	EXIST	FD-2A-16.5
POLE TYPE-LNGTH	EXIST	EXIST	EXIST	EXIST	P-1-C-24
POLE RAKE	EXIST	EXIST	EXIST	EXIST	4.0"
MISCELLANEOUS					

POLE NO.	EXIST	EXIST	R/4	R/6	EXIST	EXIST
POLE ID	61977	52110A	20045S	20112S	1260	1306A
POLE STATION	619+77	521+10	S 200+45	S 201+12	12+60	13+06
POLE OFFSET	-	-	R 18.96	R 14.06	-	-
CWH	EXIST	EXIST	19'-6"	19'-6"	EXIST	EXIST
SUPT TYPE	EXIST	EXIST	CSA-1	CSA-1	EXIST	FXT-1
FDN TYPE-DEPTH	EXIST	EXIST	FD-2D-27.0	FD-2B-16.5	EXIST	EXIST
POLE TYPE-LNGTH	EXIST	EXIST	P-4-C-26	P-2L-C-32	EXIST	EXIST
POLE RAKE	EXIST	EXIST	3.0"	4.0"	EXIST	EXIST
MISCELLANEOUS						

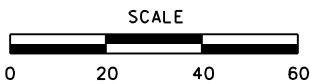
EXISTING



NOTES:

- FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
- POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
- OCS POLES R/1, R/3 AND R/5 ARE TO BE INSTALLED IN CONTAMINATED SOIL LOCATION. CONTAMINATED SOIL SHALL BE REMOVE IN ACCORDANCE WITH ALL STATE AND FEDERAL REGULATIONS BY CONTRACTOR.
- REMOVAL OF EXISTING OCS POLES TO BE DONE AFTER THE EXISTING AND PROPOSED OCS HAS BEEN FULLY SUPPORTED AS PER DESIGN DRAWINGS AS PART OF THIS CONTRACT. AFTER REMOVAL OF OCS POLES, EXISTING OCS FOUNDATIONS TO BE DEMOLISHED TO AT LEAST 3 FEET BELOW GRADE. CONTRACTOR TO COORDINATE REMOVAL AND DEMO OF EXISTING OCS POLES AND FOUNDATIONS WITH ALL IMPACTED DISCIPLINES.
- CONTRACTOR MAY USE EXISTING OCS ASSEMBLIES FOR THE EXISTING ALIGNMENT. ALLOCATED OCS ASSEMBLIES AT THESE LOCATIONS TO BE USED WHEN EXISTING ASSEMBLIES ARE NO LONGER VIABLE DUE TO THE PROPOSED WORK.
- INTERFACE WITH THE EXISTING SYSTEM HAS BEEN DESIGN BASED ON EXISTING POLE DATA FROM "KANSAS CITY DOWNTOWN STREETCAR PROJECT - VOLUME 4 - SYSTEMS" DATED MARCH 2014. POLE AND FOUNDATIONS SIZES HAVE NOT BEEN CONFIRMED BY HNTB.

POLE NO.	EXIST	EXIST	EXIST	R/1	EXIST	R/3	R/3A
POLE ID	51883B	51973B	1075	11107Y	1195B	00092N	00136N
POLE STATION	518+83	519+73	10+75	Y 111+07	11+95	N 000+92	N 001+36
POLE OFFSET	-	-	-	R 26.14	-	R 23.28	R 23.56
CWH	EXIST	EXIST	EXIST	19'-6"	EXIST	19'-6"	19'-6"
SUPT TYPE	EXIST	EXIST	EXIST	(2) CSA-1	EXIST	CSA-1	
FDN TYPE-DEPTH	EXIST	EXIST	EXIST	FD-2LE-27.0	EXIST	FD-2A-16.5	FD-2B-16.5
POLE TYPE-LNGTH	EXIST	EXIST	EXIST	P-5L-C-32	EXIST	P-1-C-28	P-2-C-28
POLE RAKE	EXIST	EXIST	EXIST	2.0"	EXIST	2.0"	3.0"
MISCELLANEOUS							



REV	DATE	DESCRIPTION	DESIGNED BY	PFW
			CHECKED BY	BP
			DRAWN BY	DC
			CHECKED BY	BP
			APPROVED BY	NKS
PLOT DATE: 12/22/2022			2:00:10 PM	
			DATE 12-23-2022	



ISSUE FOR BID

HDR
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

DATE: 12-23-2022

HNTB
The HNTB Companies
715 Kirk Drive
Kansas City, MO 64105
816-472-1201
Certificate of Authority: 001270

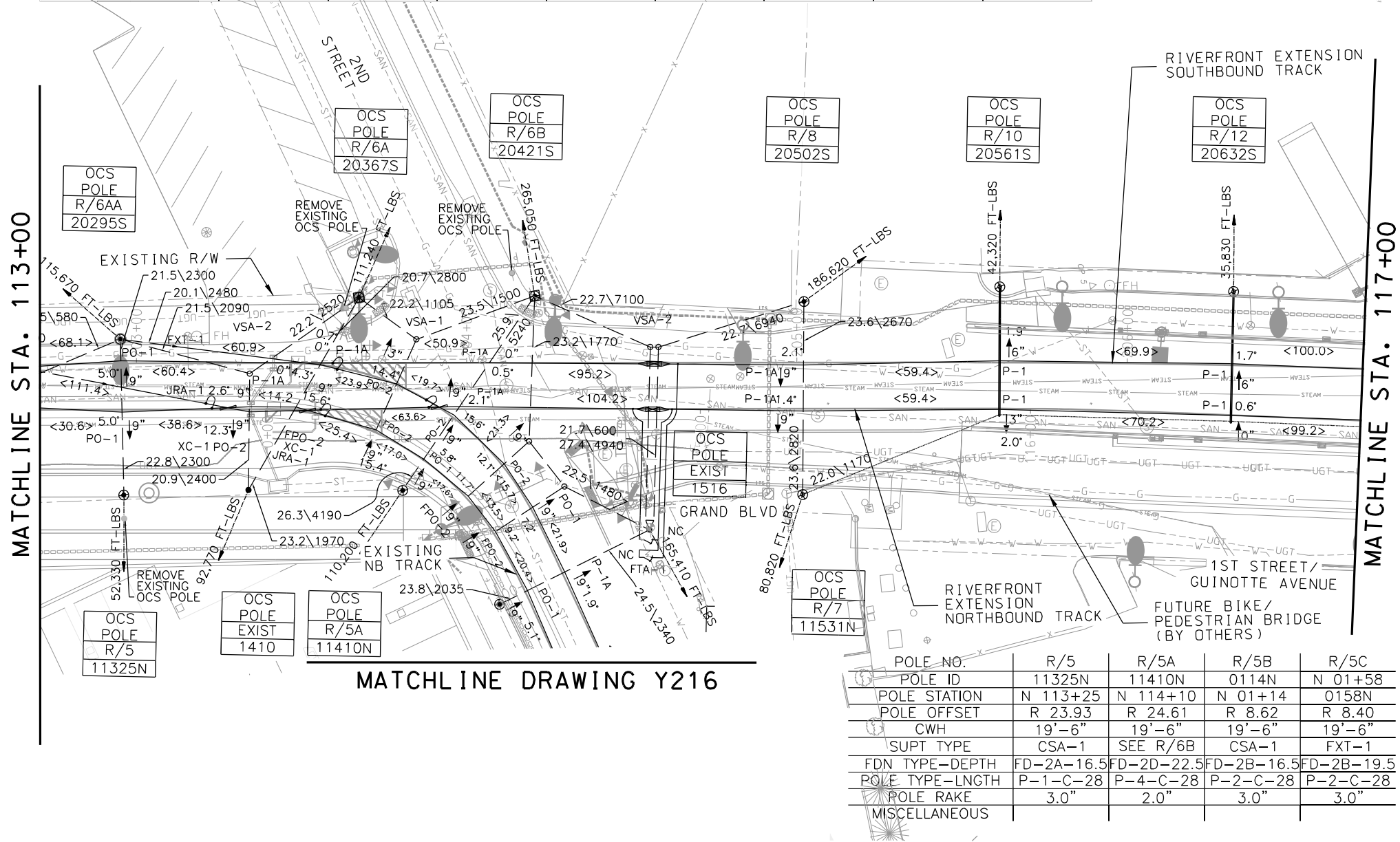
NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OCS LAYOUT PLAN STA BEGIN TO STA 113+00

SCALE FOR 22"x34": H: 1" = 20'	
FILENAME: Y201.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.: Y201	SHEET NO.: 385

POLE NO.	R/6AA	R/6A	R/6B	EXIST	R/8	R/7	R/10	R/12
POLE ID	20295S	20367S	20421S	1516	20502S	11531N	20561S	20632S
POLE STATION	S 202+95	S 203+67	S 204+21	1516	S 205+02	N 115+31	S 205+61	S 206+32
POLE OFFSET	R 7.31	R 19.86	R 20.27	EXIST	R 18.45	R 26.03	R 22.91	R 22.34
CWH	EXIST	19'-6"	19'-6"	-	19'-6"	19'-6"	19'-6"	19'-6"
SUPT TYPE	FXT-1	CSA-1	CSA-1	-	CSA-1	BA-2	BA-2	BA-2
FDN TYPE-DEPTH	FD-2D-22.5	FD-2D-27.0	FD-2E-27.0	EXIST	FD-2E-27.0	FD-2B-22.5	FD-2C-16.5	FD-2C-16.5
POLE TYPE-LNGTH	P-4-C-28	P-4-C-28	P-5-C-28	EXIST	P-5-C-28	P-2-C-28	P-3-C-34	P-3-C-38
POLE RAKE	2.0"	5.0"	7.0"	EXIST	1.0"	5.0"	5.0"	6.0"
MISCELLANEOUS								

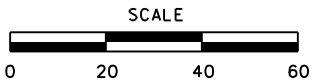


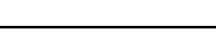
MATCHLINE DRAWING Y216

NOTES:

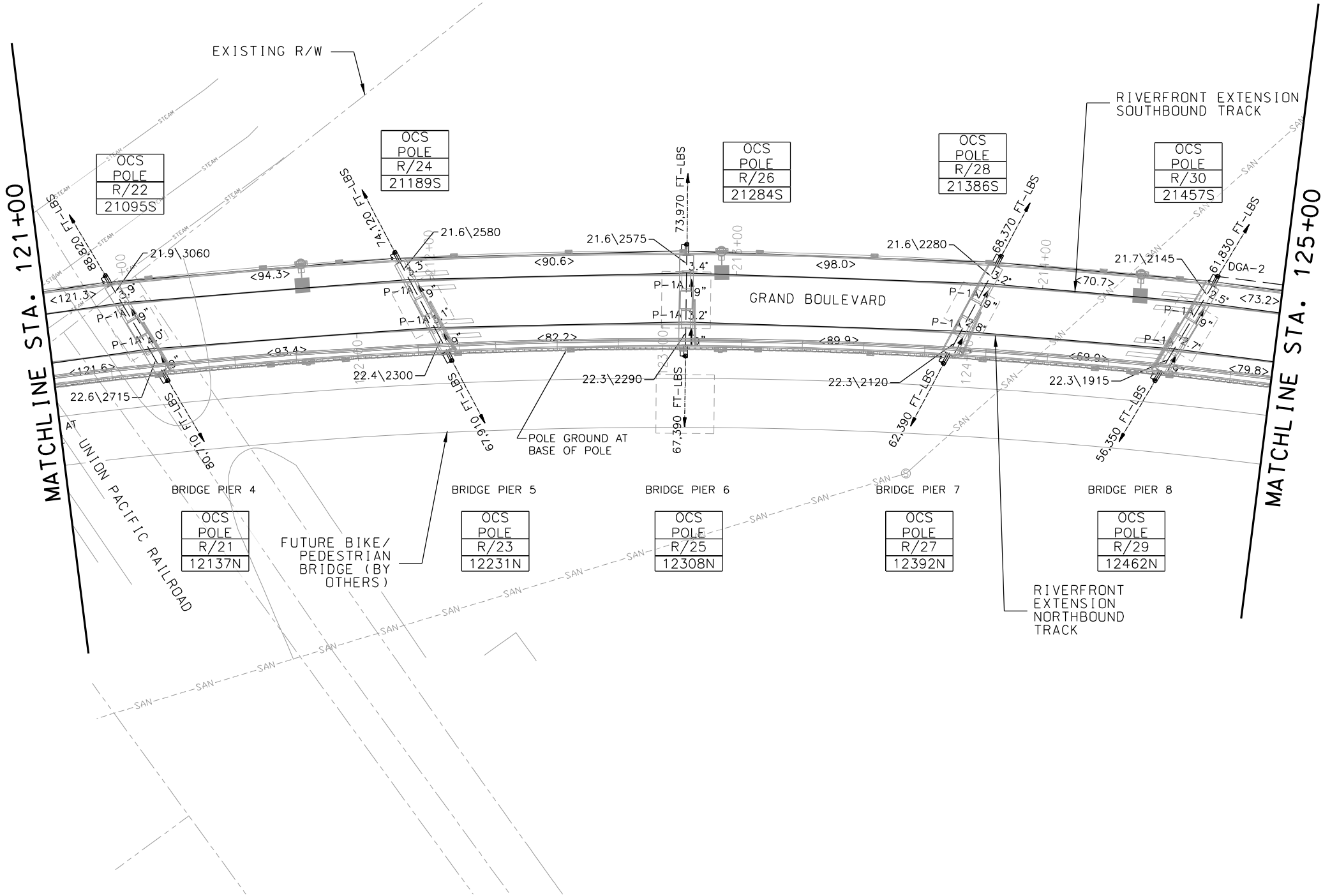
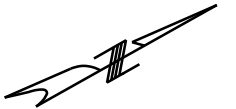
- FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
- POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
- OCS POLES R/1, R/3 AND R/5 ARE TO BE INSTALLED IN CONTAMINATED SOIL LOCATION. CONTAMINATED SOIL SHALL BE REMOVE IN ACCORDANCE WITH ALL STATE AND FEDERAL REGULATIONS BY CONTRACTOR .
- REMOVAL OF EXISTING OCS POLES TO BE DONE AFTER THE EXISTING AND PROPOSED OCS HAS BEEN FULLY SUPPORTED AS PER DESIGN DRAWINGS AS PART OF THIS CONTRACT. AFTER REMOVAL OF OCS POLES, EXISTING OCS FOUNDATIONS TO BE DEMOLISHED TO AT LEAST 3 FEET BELOW GRADE. CONTRACTOR TO COORDINATE REMOVAL AND DEMO OF EXISTING OCS POLES AND FOUNDATIONS WITH ALL IMPACTED DISCIPLINES.
- INTERFACE WITH THE EXISTING SYSTEM HAS BEEN DESIGN BASED ON EXISTING POLE DATA FROM "KANSAS CITY DOWNTOWN STREETCAR PROJECT - VOLUME 4 - SYSTEMS" DATED MARCH 2014. POLE AND FOUNDATIONS SIZES SHALL BE CONFIRMED IN FIELD BY CONTRACTOR.
- SEE DRAWING Y217 FOR LARGER SCALE PLAN.

POLE NO.	R/5	R/5A	R/5B	R/5C
POLE ID	11325N	11410N	0114N	N 01+58
POLE STATION	N 113+25	N 114+10	N 01+14	0158N
POLE OFFSET	R 23.93	R 24.61	R 8.62	R 8.40
CWH	19'-6"	19'-6"	19'-6"	19'-6"
SUPT TYPE	CSA-1	SEE R/6B	CSA-1	FXT-1
FDN TYPE-DEPTH	FD-2A-16.5	FD-2D-22.5	FD-2B-16.5	FD-2B-19.5
POLE TYPE-LNGTH	P-1-C-28	P-4-C-28	P-2-C-28	P-2-C-28
POLE RAKE	3.0"	2.0"	3.0"	3.0"
MISCELLANEOUS				

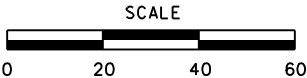


REV	DATE	DESCRIPTION	DESIGNED BY	PFW		 BHANUVADAN K. PARIKH - ENGINEER LICENSE NO. 2021046193	ISSUE FOR BID	DATE: 12-23-2022	 The HNTB Companies 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20'
			CHECKED BY	BP							FILENAME: Y202.dgn
			DRAWN BY	DC							CONTRACT NO.: CONTRACT NO. ...
			CHECKED BY	BP							VOLUME: 1
			APPROVED BY	NKS							DRAWING NO.: Y202
PLOT DATE: 12/22/2022			2:00:24 PM				DATE	12-23-2022	NOT FOR CONSTRUCTION		SHEET NO.: 386
OCS LAYOUT PLAN STA 113+00 TO STA 117+00											

POLE NO.	R/22	R/21	R/24	R/23	R/26	R/25	R/28	R/27	R/30	R/29
POLE ID	21095S	12137N	21189S	12231N	21284S	12308N	21386S	12392N	21457S	12462N
POLE STATION	S 210+95	N 121+37	S 221+89	N 122+31	S 212+84	N 123+08	S 213+86	N 123+92	S 214+57	N 124+62
POLE OFFSET	R 10.02	R 10.11	R 9.73	R 10.30	R 10.02	R 10.27	R 9.92	R 10.17	R 9.72	R 10.25
CWH	19'-9"	19'-9"	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"
SUPT TYPE	CSA-1		CSA-1		CSA-1		CSA-1		CSA-1	
FDN TYPE-DEPTH	-	-	-	-	-	-	-	-	-	-
POLE TYPE-LNGTH	P-2B-32	P-2B-32	P-2B-32	P-1B-32	P-2B-32	P-1B-32	P-1B-32	P-1B-32	P-3B-32	P-1B-32
POLE RAKE	5.0"	4.0"	4.0"	3.0"	4.0"	3.0"	4.0"	3.0"	3.0"	3.0"
MISCELLANEOUS										

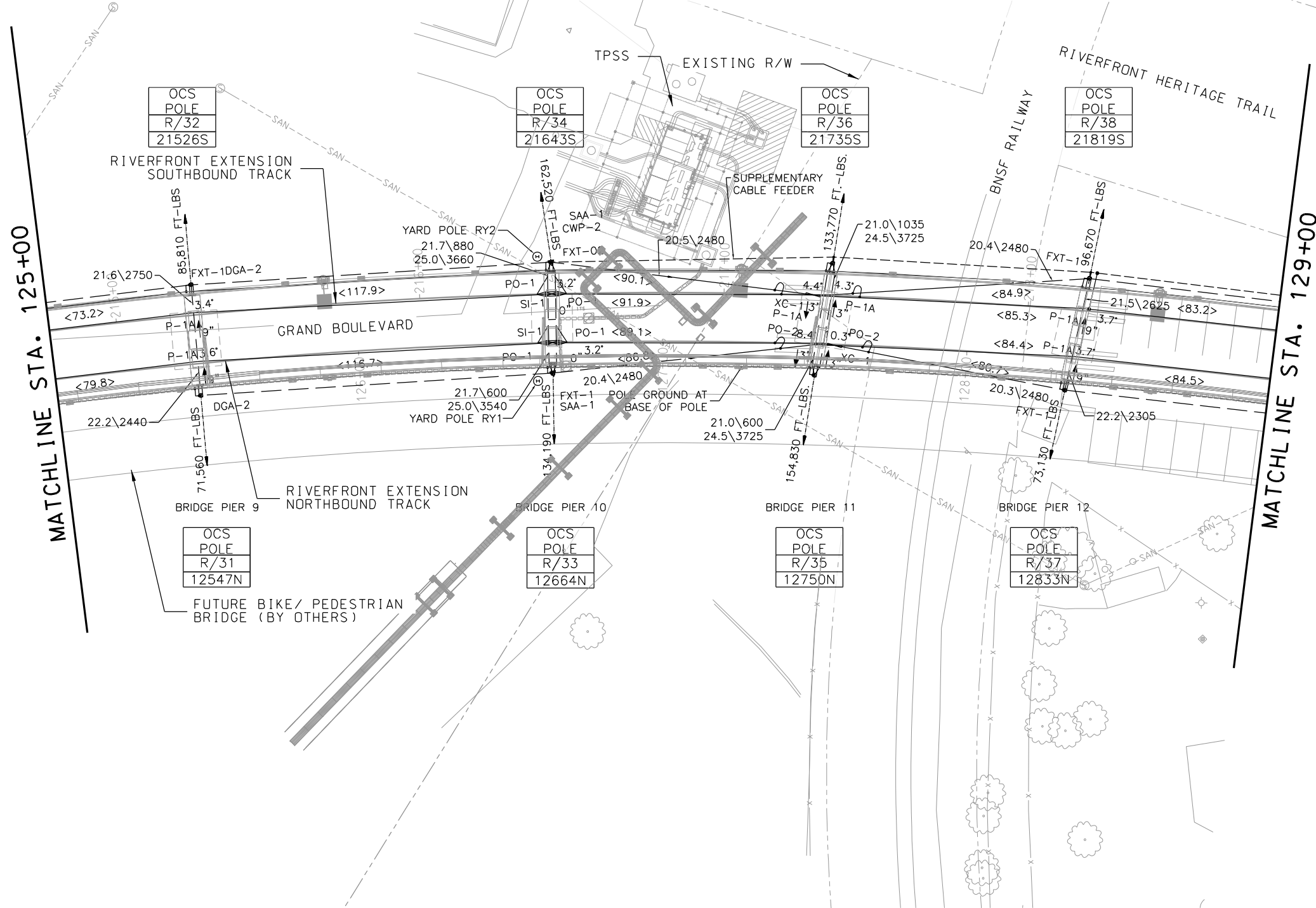
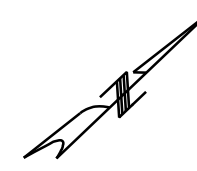


- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.

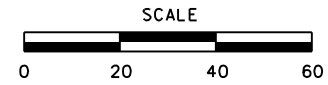


REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 The HNTB Companies 10450 Holmes Road Suite 600 Kansas City, MO 64105 816-360-2700 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20'
			CHECKED BY	BP			 HDR Engineering, Inc.	Y204.dgn			FILENAME:
			DRAWN BY	DC							CONTRACT NO.:
			CHECKED BY	BP							CONTRACT NO. ***
			APPROVED BY	NKS							VOLUME: 1
PLOT DATE: 12/22/2022			2:00:47 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION			DRAWING NO.: SHEET NO.:	
OCS LAYOUT PLAN STA 121+00 TO STA 125+00										Y204	388

POLE NO.	R/32	R/31	RY1	R/34	R/33	RY2	R/36	R/35	R/38	R/37
POLE ID	21526S	12547N	RY1	21643S	12664N	RY2	21735S	12750N	21819S	12833N
POLE STATION	S 215+26	N 125+47	-	S 216+43	N 126+64	-	S 217+35	N 127+50	S 218+19	N 128+33
POLE OFFSET	R 9.99	R 10.44	-	R 10.44	R 10.00	-	R 10.60	R 10.28	R 10.70	R 10.48
CWH	19'-6"	19'-6"	-	19'-6"	19'-6"	-	19'-6"	19'-6"	19'-6"	19'-6"
SUPT TYPE	CSA-1		-	HSA-1 (2); FXT-1; FXT-02		-	OLP-1		CSA-1; FXT-1 (2)	
FDN TYPE-DEPTH	-	-	FD-3FA-12	-	-	FD-3FA-12	-	-	-	-
POLE TYPE-LNGTH	P-3B-32	P-3B-32	W 12 X 65	P-5B-34	P-5B-34	W 12 X 65	P-4B-34	P-4B-34	P-3B-32	P-2B-32
POLE RAKE	4.0"	3.0"	-	3.0"	3.0"	-	4.0"	3.0"	2.0"	4.0"
SFH (FSA-01)	-	-	-	22'-6"	-	-	22'-0"	-	21'-6"	-

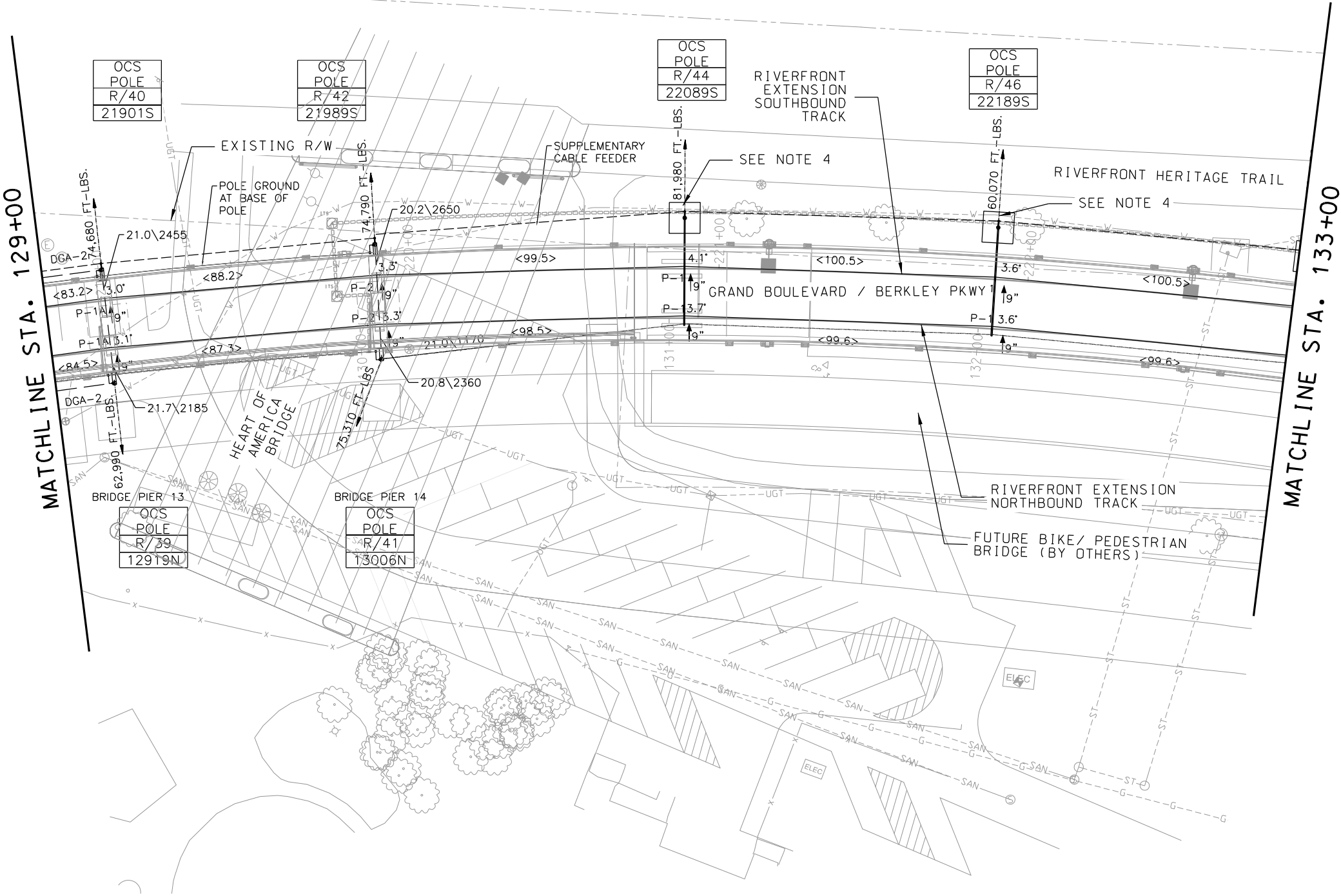


- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.

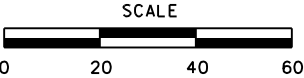


REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y205.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1 DRAWING NO.: SHEET NO.: Y205 389	
			CHECKED BY	BP				HDR Engineering, Inc.				
			DRAWN BY	DC				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				
			CHECKED BY	BP				The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270				
			APPROVED BY	NKS								
PLOT DATE: 12/22/2022			2:00:58 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		OCS LAYOUT PLAN STA 125+00 TO STA 129+00			

POLE NO.	R/40	R/39	R/42	R/41	R/44	R/46
POLE ID	21901S	12919N	21989S	13006N	22089S	22189S
POLE STATION	S 219+01	N 129+19	S 219+89	N 130+06	S 220+89	S 221+89
POLE OFFSET	R 10.01	R 10.78	R 10.61	R 10.45	R 16.43	R 16.80
CWH	18'-10 1/2"	19'-6"	18'-10 1/2"	18'-10 1/2"	18'-10 1/2"	19'-0"
SUPT TYPE	CSA-1		CSA-1		BA-2	BA-2
FDN TYPE-DEPTH	-	-	-	-	FD-4D	FD-4D
POLE TYPE-LNGTH	P-3B-32	P-3B-30	P-2B-30	P-2B-30	P-4-54	P-4-48
POLE RAKE	3.0"	2.0"	4.0"	4.0"	2.0"	3.0"
SFH (FSA-01)	21'-0"	-	20'-6"	-	21'-3"	22'-0"

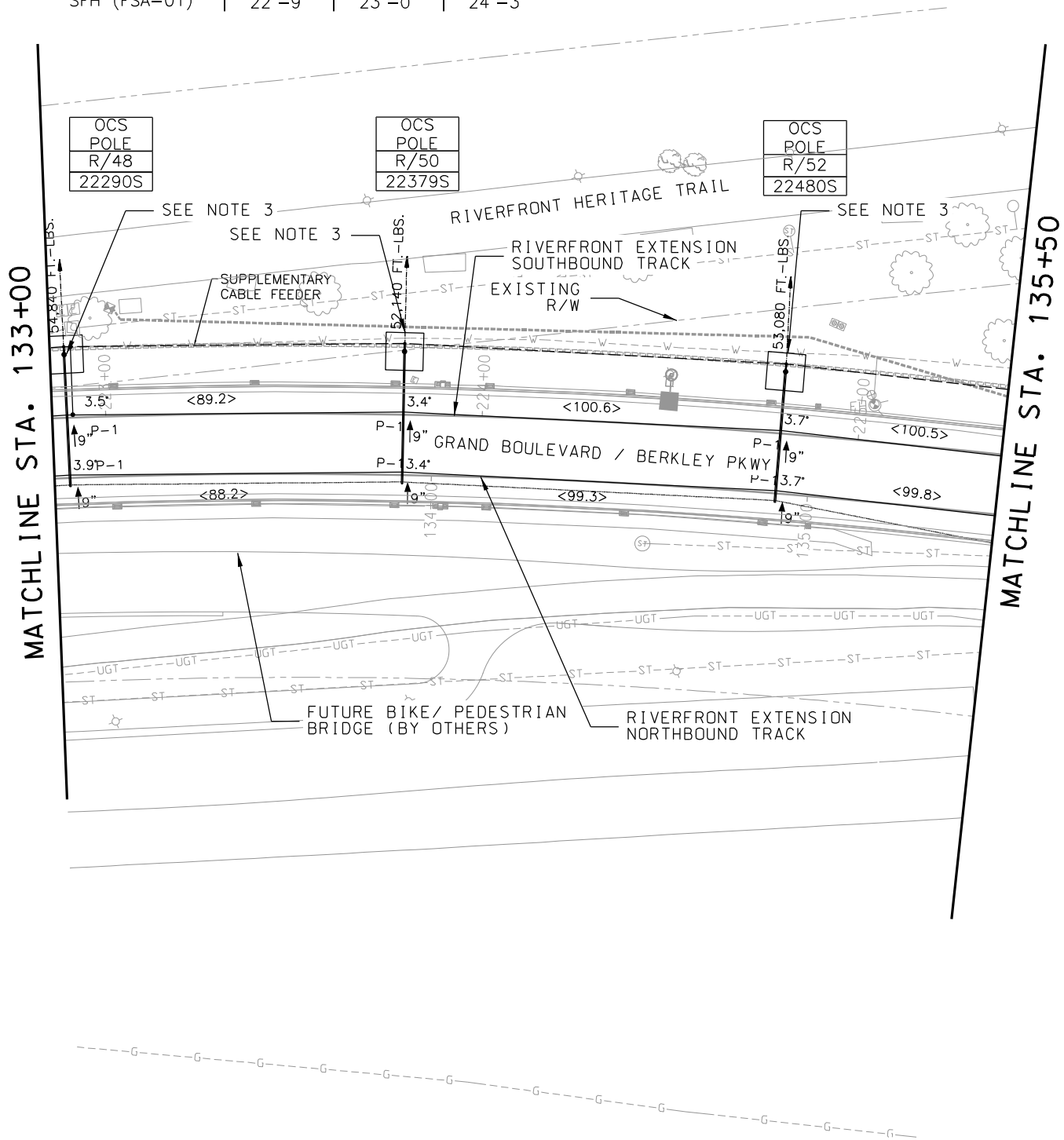


- NOTES:**
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR BRIDGE ATTACHMENT DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. CONTRACTOR SHALL PROVIDE SHORING FOR FOOTING EXCAVATIONS ON POLES ADJACENT TO MSE BRIDGE APPROACH.

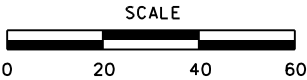


REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y206.dgn CONTRACT NO.: CONTRACT NO. ... VOLUME: 1
			CHECKED BY	BP								
			DRAWN BY	DC								
			CHECKED BY	BP								
			APPROVED BY	NKS								
PLOT DATE: 12/22/2022			2:01:07 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		OCS LAYOUT PLAN STA 129+00 TO STA 133+00		DRAWING NO.: SHEET NO.: Y206 390	

POLE NO.	R/48	R/50	R/52
POLE ID	22290S	22379S	22480S
POLE STATION	S 222+90	S 223+79	S 224+80
POLE OFFSET	R 16.78	R 16.79	R 16.43
CWH	19'-3"	19'-3"	19'-6"
SUPT TYPE	BA-2	BA-2	BA-2
FDN TYPE-DEPTH	FD-4C	FD-4C	FD-4C
POLE TYPE-LNGTH	P-3-44	P-3-42	P-3-40
POLE RAKE	6.0"	5.0"	4.0"
SFH (FSA-01)	22'-9"	23'-0"	24'-3"



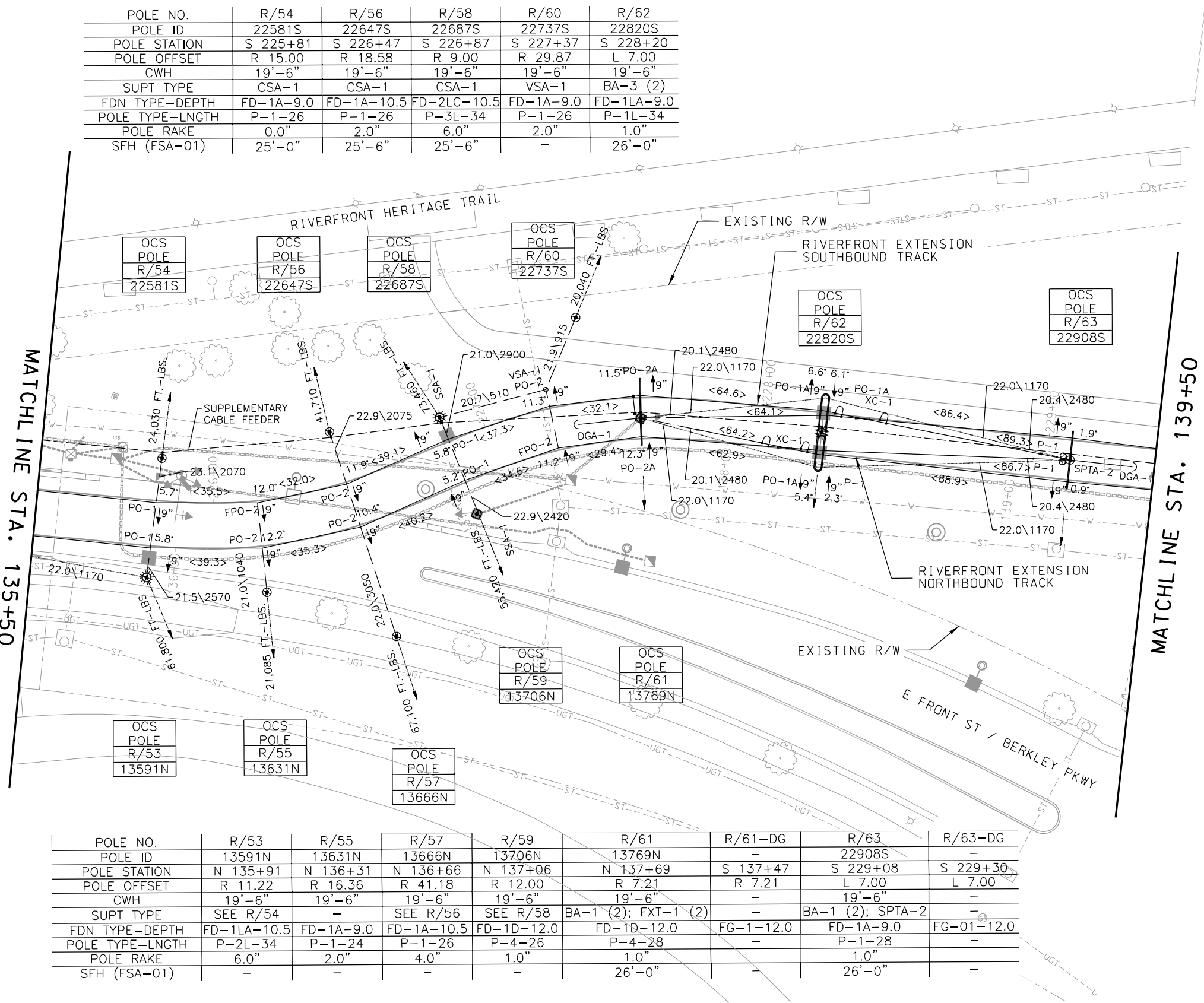
- NOTES:**
- 1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 - 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 - 3. CONTRACTOR SHALL PROVIDE SHORING FOR FOOTING EXCAVATIONS ON POLES ADJACENT TO MSE BRIDGE APPROACH.



REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20'
			CHECKED BY	BP			 HDR Engineering, Inc.	 The HNTB Companies		FILENAME: Y207.dgn
			DRAWN BY	DC			10450 Holmes Road Suite 600 Kansas City, MO 64105 816-360-2700	715 Kirk Drive Kansas City, MO 64105 816-472-1201		CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	BP			Certificate of Authority: 000856			VOLUME: 1
			APPROVED BY	NKS						DRAWING NO.: SHEET NO.:
PLOT DATE: 12/22/2022			DATE: 12-23-2022		NOT FOR CONSTRUCTION		OCS LAYOUT PLAN STA 133+00 TO STA 135+50		Y207	391

POLE NO.	R/54	R/56	R/58	R/60	R/62
POLE ID	22581S	22647S	22687S	22737S	22820S
POLE STATION	S 225+81	S 226+47	S 226+87	S 227+37	S 228+20
POLE OFFSET	R 15.00	R 18.58	R 9.00	R 29.87	L 7.00
CWH	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"
SUPT TYPE	CSA-1	CSA-1	CSA-1	VSA-1	BA-3 (2)
FDN TYPE-DEPTH	FD-1A-9.0	FD-1A-10.5	FD-2LC-10.5	FD-1A-9.0	FD-1LA-9.0
POLE TYPE-LNGTH	P-1-26	P-1-26	P-3L-34	P-1-26	P-1L-34
POLE RAKE	0.0"	2.0"	6.0"	2.0"	1.0"
SFH (FSA-01)	25'-0"	25'-6"	25'-6"	-	26'-0"

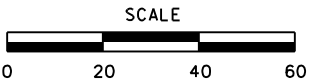
MATCHLINE STA. 135+50



MATCHLINE STA. 139+50

- NOTES:
- FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 - POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.

POLE NO.	R/53	R/55	R/57	R/59	R/61	R/61-DG	R/63	R/63-DG
POLE ID	13591N	13631N	13666N	13706N	13769N	-	22908S	-
POLE STATION	N 135+91	N 136+31	N 136+66	N 137+06	N 137+69	S 137+47	S 229+08	S 229+30
POLE OFFSET	R 11.22	R 16.36	R 41.18	R 12.00	R 7.21	R 7.21	L 7.00	L 7.00
CWH	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"	-	19'-6"	-
SUPT TYPE	SEE R/54	-	SEE R/56	SEE R/58	BA-1 (2); FXT-1 (2)	-	BA-1 (2); SPTA-2	-
FDN TYPE-DEPTH	FD-1LA-10.5	FD-1A-9.0	FD-1A-10.5	FD-1D-12.0	FD-1D-12.0	FC-1-12.0	FD-1A-9.0	FG-01-12.0
POLE TYPE-LNGTH	P-2L-34	P-1-24	P-1-26	P-4-26	P-4-28	-	P-1-28	-
POLE RAKE	6.0"	2.0"	4.0"	1.0"	1.0"	-	1.0"	-
SFH (FSA-01)	-	-	-	-	26'-0"	-	26'-0"	-



REV	DATE	DESCRIPTION

PLOT DATE: 12/22/2022 2:01:25 PM

DESIGNED BY	PFW
CHECKED BY	BP
DRAWN BY	DC
CHECKED BY	BP
APPROVED BY	NKS
DATE	12-23-2022



ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

The HNTB Companies
715 Kirk Drive
Kansas City, MO 64105
816-472-1201
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

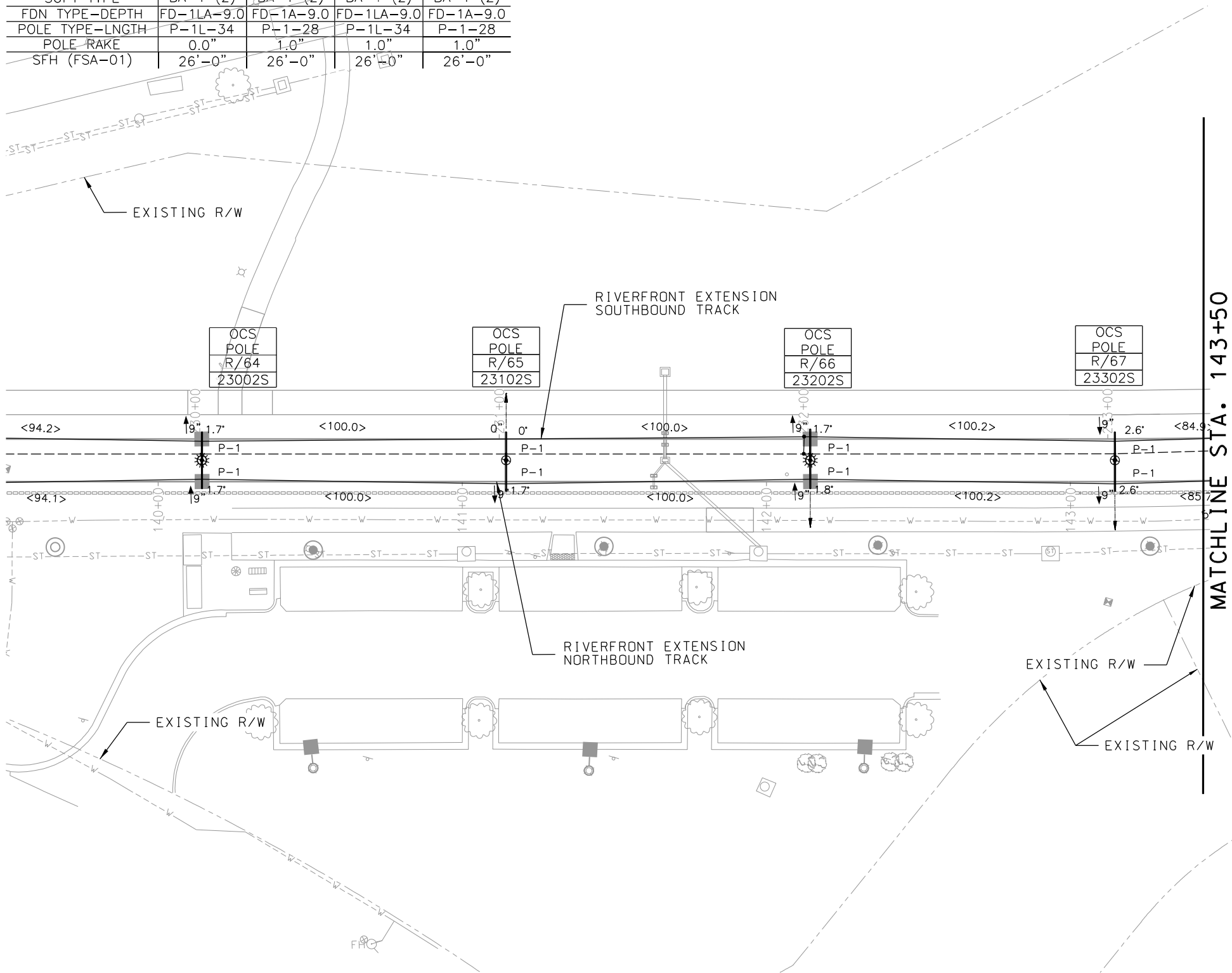
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OCS LAYOUT PLAN
STA 135+50 TO STA 139+50

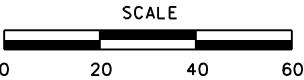
SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y208.dgn	CONTRACT NO.: CONTRACT NO. ***
DRAWING NO.: Y208	SHEET NO.: 392

POLE NO.	R/64	R/65	R/66	R/67
POLE ID	23002S	23102S	23202S	23302S
POLE STATION	S 230+02	S 231+02	S 232+02	S 233+02
POLE OFFSET	L 7.00	L 7.00	L 7.00	L 7.00
CWH	19'-6"	19'-6"	19'-6"	19'-6"
SUPT TYPE	BA-1 (2)	BA-1 (2)	BA-1 (2)	BA-1 (2)
FDN TYPE-DEPTH	FD-1LA-9.0	FD-1A-9.0	FD-1LA-9.0	FD-1A-9.0
POLE TYPE-LENGTH	P-1L-34	P-1-28	P-1L-34	P-1-28
POLE RAKE	0.0"	1.0"	1.0"	1.0"
SFH (FSA-01)	26'-0"	26'-0"	26'-0"	26'-0"

MATCHLINE STA. 139+50



- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.



REV	DATE	DESCRIPTION

DESIGNED BY	PFW
CHECKED BY	BP
DRAWN BY	DC
CHECKED BY	BP
APPROVED BY	NKS
DATE	12-23-2022



ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

The HNTB Companies
715 Kirk Drive
Kansas City, MO 64105
816-472-1201
Certificate of Authority: 001270

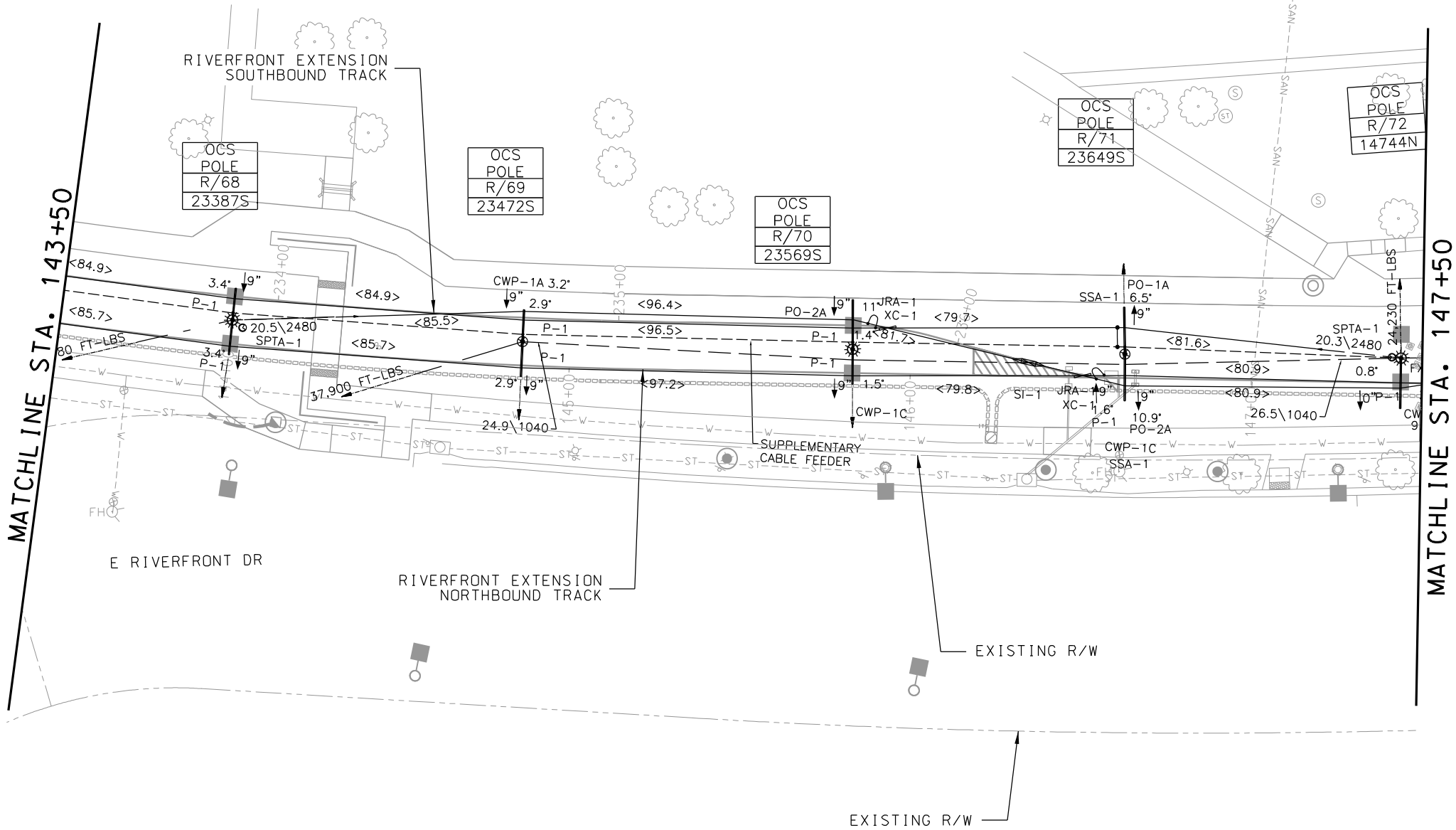
NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

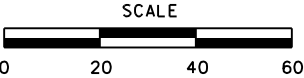
OCS LAYOUT PLAN
STA 139+50 TO STA 143+50

SCALE FOR 22"x34":	
H: 1" = 20'	
FILENAME: Y209.dgn	
CONTRACT NO.: ***	
VOLUME: 1	
DRAWING NO.: Y209	SHEET NO.: 393

POLE NO.	R/68	R/69	R/70	R/71	R/72	R/72-DG
POLE ID	23387S	23472S	23569S	23649S	14744N	14771N
POLE STATION	S 233+87	S 234+72	S 235+69	S 236+49	N 147+44	N 147+71
POLE OFFSET	L 7.00	L 7.00	L 7.00	L 7.00	L 7.24	L 7.24
CWH	19'-6"	19'-6"/20'-6"	19'-6"/19'-7"	19'-6"/19'-7"	19'-6"/20'-6"	-
SUPT TYPE	BA-1 (2); SPTA-1	BA-1 (2)	BA-1,(2) BA-1	BA-1,(2) BA-1	BA-1; SPTA-1; FXT-02	DGA-1
FDN TYPE-DEPTH	FD-2LB-10.5	FD-1LB-10.5	FD-2LB-10.5	FD-1B-10.5	FD-1LC-12.5	FG-01-10.5
POLE TYPE-LNGTH	P-2L-34	P-2-28	P-2L-34	P-2-28	P-5L-34	-
POLE RAKE	1.0"	1.0"	1.0"	1.0"	0.0"	-
SFH (FSA-01)	26'-0"	26'-0"	27'-0"	27'-0"	27'-0"	-



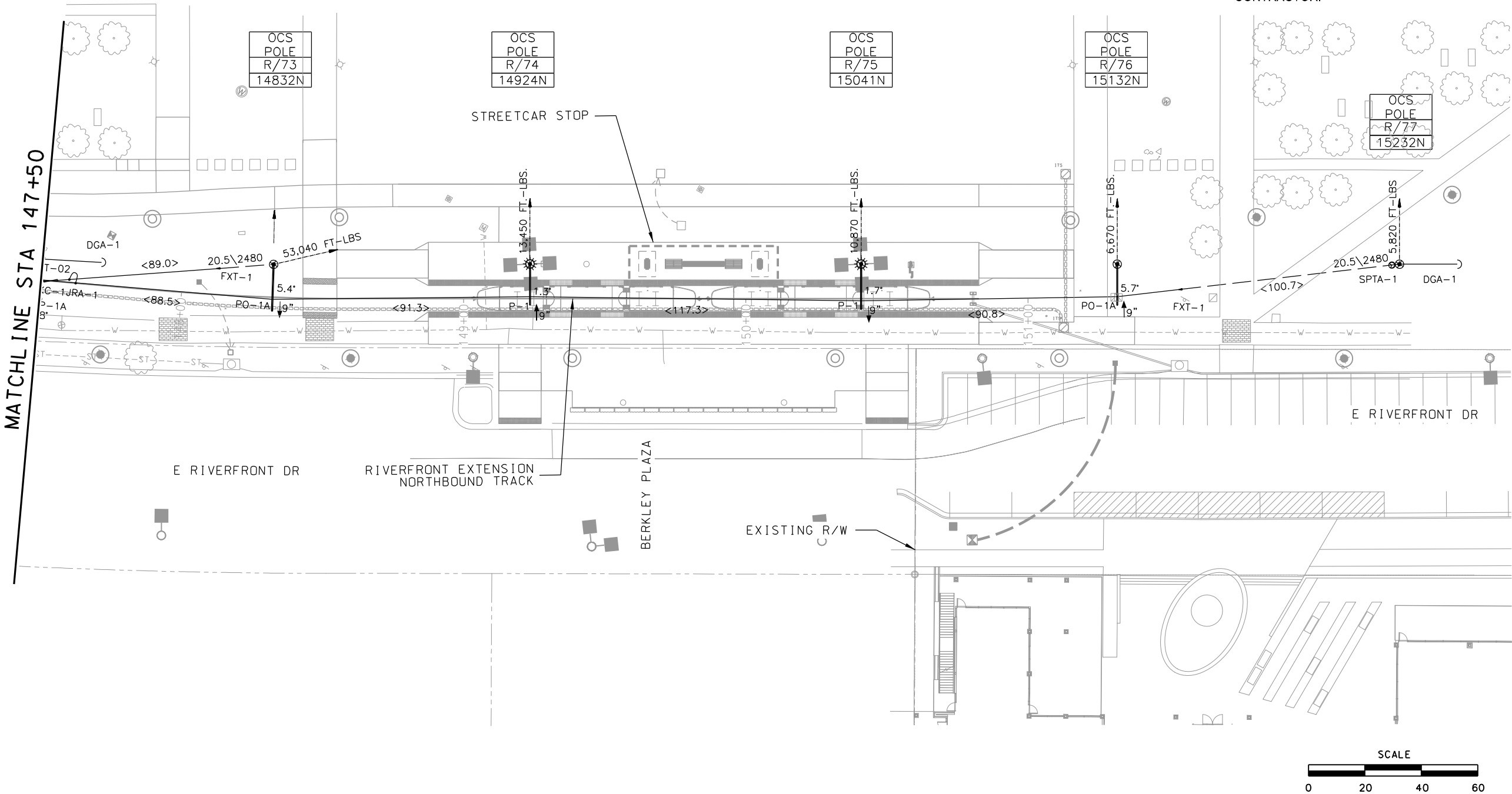
- NOTES:
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.



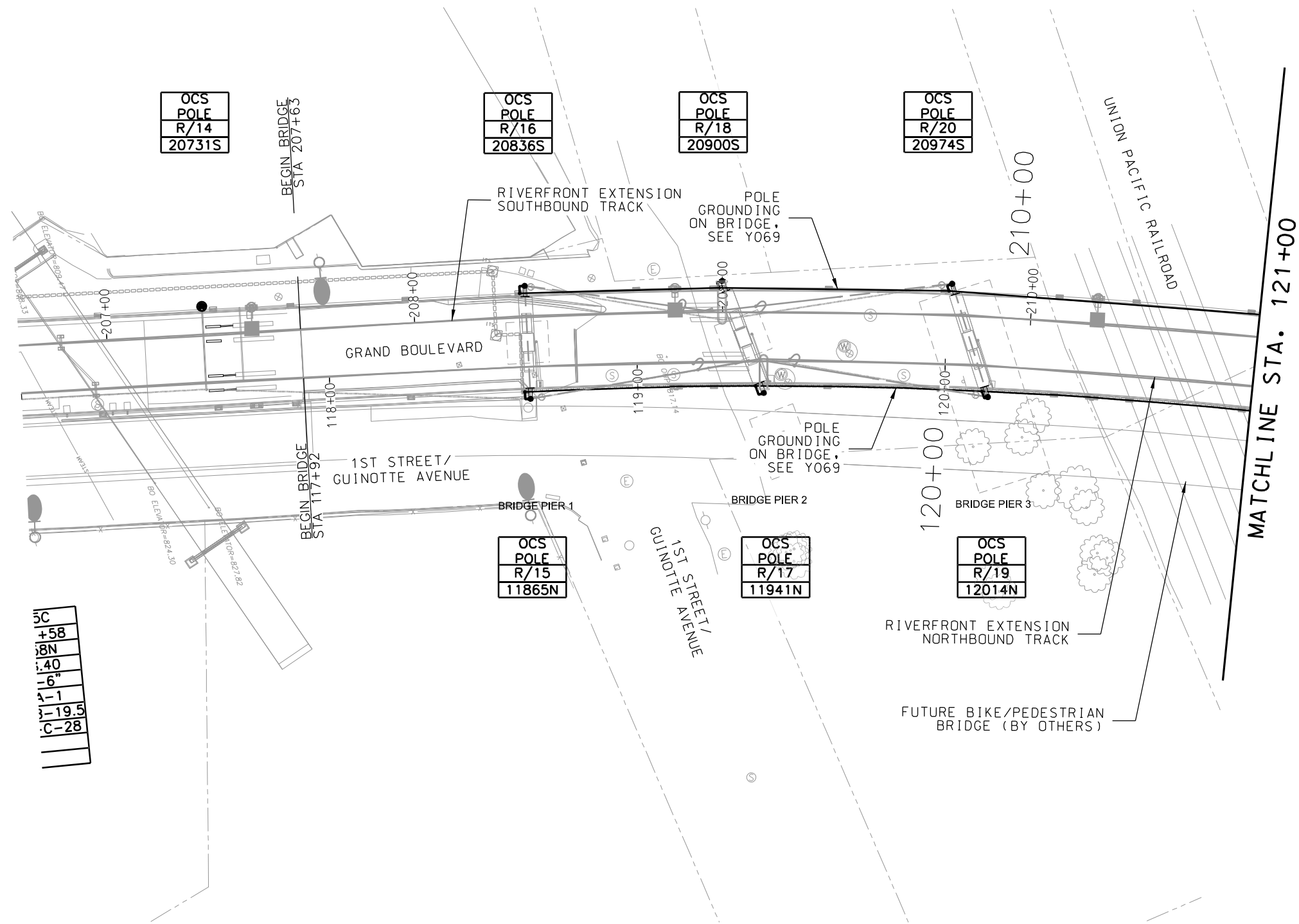
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y210.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1	
			CHECKED BY	BP			 HDR Engineering, Inc.	 The HNTB Companies			
			DRAWN BY	DC			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270			
			CHECKED BY	BP							
			APPROVED BY	NKS							
PLOT DATE: 12/22/2022			2:01:43 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		OCS LAYOUT PLAN STA 143+50 TO STA 147+50		
										DRAWING NO.:	SHEET NO.:
										Y210	394

POLE NO.	R/73	R/74	R/75	R/76	R/77	R/77-DG
POLE ID	14832N	14924N	15041N	15132N	15232N	-
POLE STATION	N 148+32	N 149+24	N 150+41	N 151+32	N 152+32	N 153+53
POLE OFFSET	L 11.64	L 12.30	L 12.27	L 12.27	L 12.27	L 12.27
CWH	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"	-
SUPT TYPE	BA-1; FXT-1	BA-1	BA-1	BA-1	-	-
FDN TYPE-DEPTH	FD-1A-10.5	FD-1LA-9.0	FD-1LA-9.0	FD-1A-9.0	FD-1A-10.5	FG-01-10.5
POLE TYPE-LNGTH	P-1-26	P-1L-34	P-1L-34	P-1-26	P-1-24	-
POLE RAKE	1.0"	2.0"	2.0"	1.0"	1.0"	-
MISCELLANEOUS						

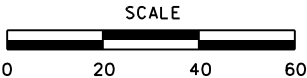
- NOTES:
- FOR GENERAL NOTES, REFER TO DRAWING G020. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G022.
 - POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.



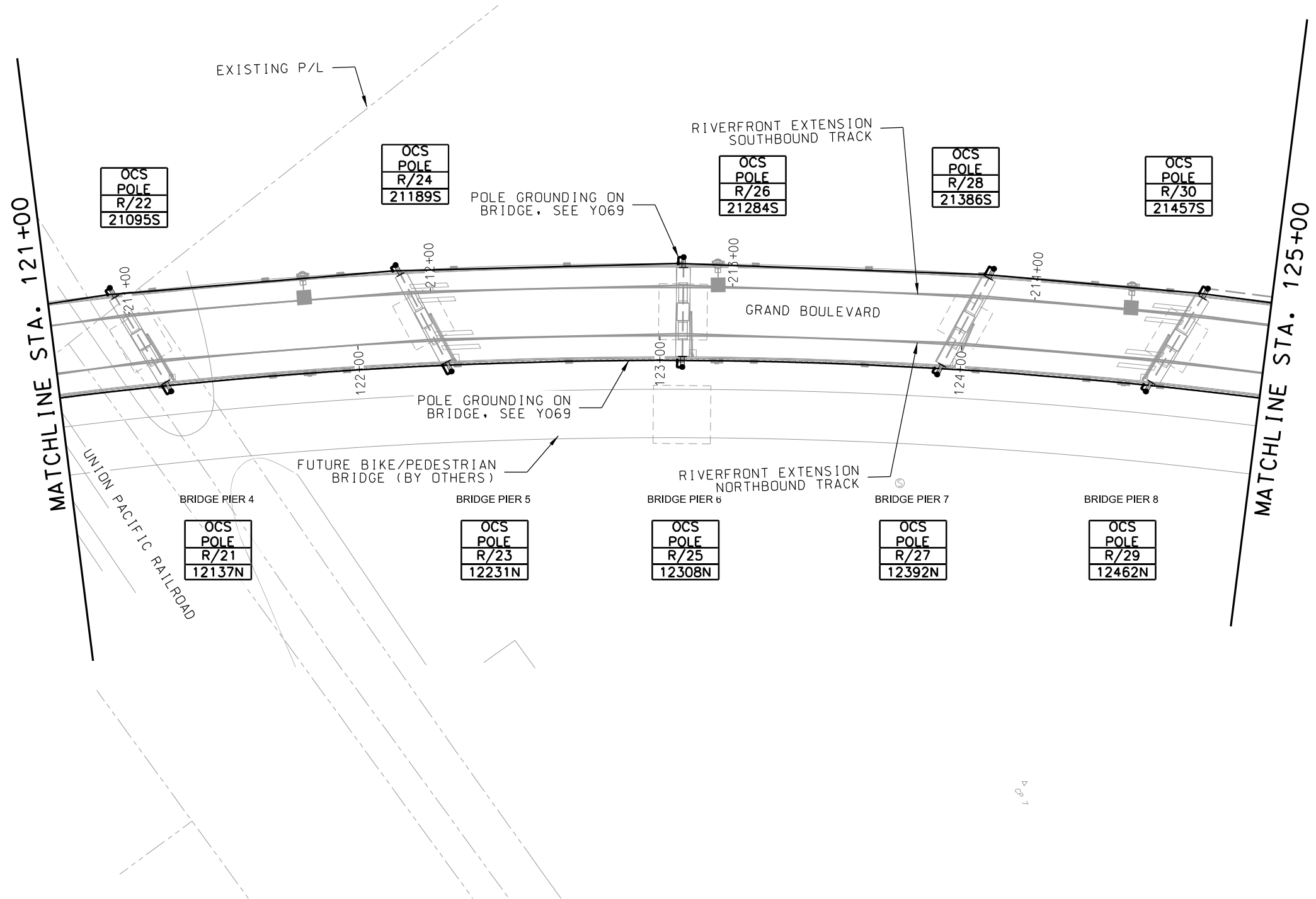
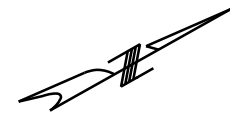
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022		The HNTB Companies 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20' FILENAME: Y211.dgn CONTRACT NO.: CONTRACT NO.: *** VOLUME: 1		
			CHECKED BY	BP										
			DRAWN BY	DC										
			CHECKED BY	BP										
			APPROVED BY	NKS										
PLOT DATE: 12/22/2022			2:01:51 PM				DATE	12-23-2022	NOT FOR CONSTRUCTION					
										OCS LAYOUT PLAN STA 147+50 TO END		DRAWING NO.: Y211	SHEET NO.: 395	



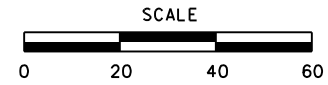
- NOTES:**
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.



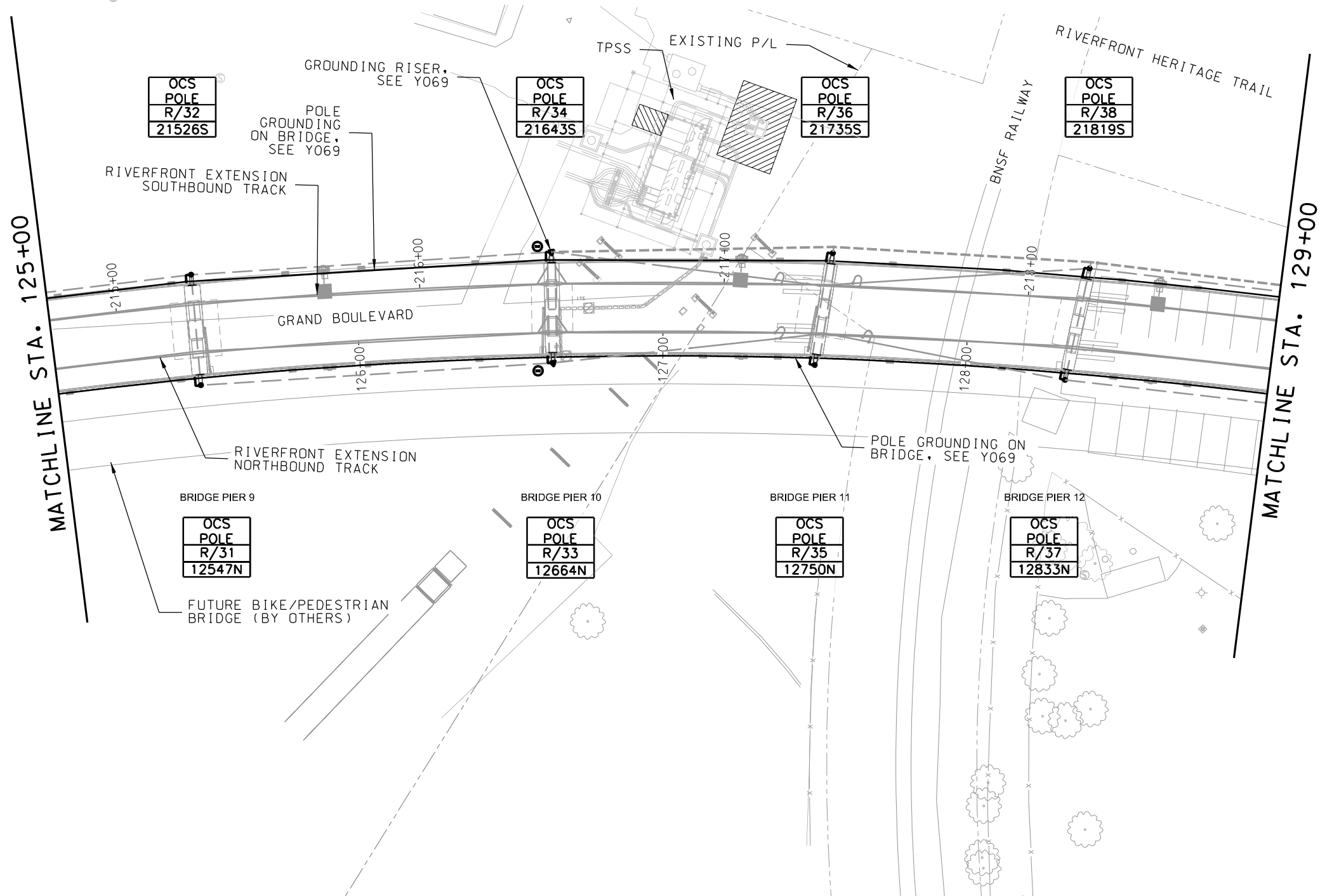
<table><tr><th>REV</th><th>DATE</th><th>DESCRIPTION</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>			REV	DATE	DESCRIPTION																DESIGNED BY PFW				ISSUE FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": H: 1" = 20'	
REV	DATE	DESCRIPTION																													
			CHECKED BY BP		HDR Engineering, Inc.		 The HNTB Companies 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856																								
			DRAWN BY DC																												
			CHECKED BY BP																												
			APPROVED BY NKS																												
PLOT DATE: 12/22/2022			DATE 12-23-2022		BHAVIVADAN K. PARIKH - ENGINEER LICENSE NO. 2021046193		NOT FOR CONSTRUCTION		OCS BRIDGE GROUNDING LAYOUT PLAN STA 117+00 TO STA 121+00		DRAWING NO.: Y212	SHEET NO.: 396																			



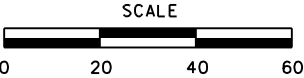
- NOTES:**
- 1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 - 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 - 3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
 - 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.



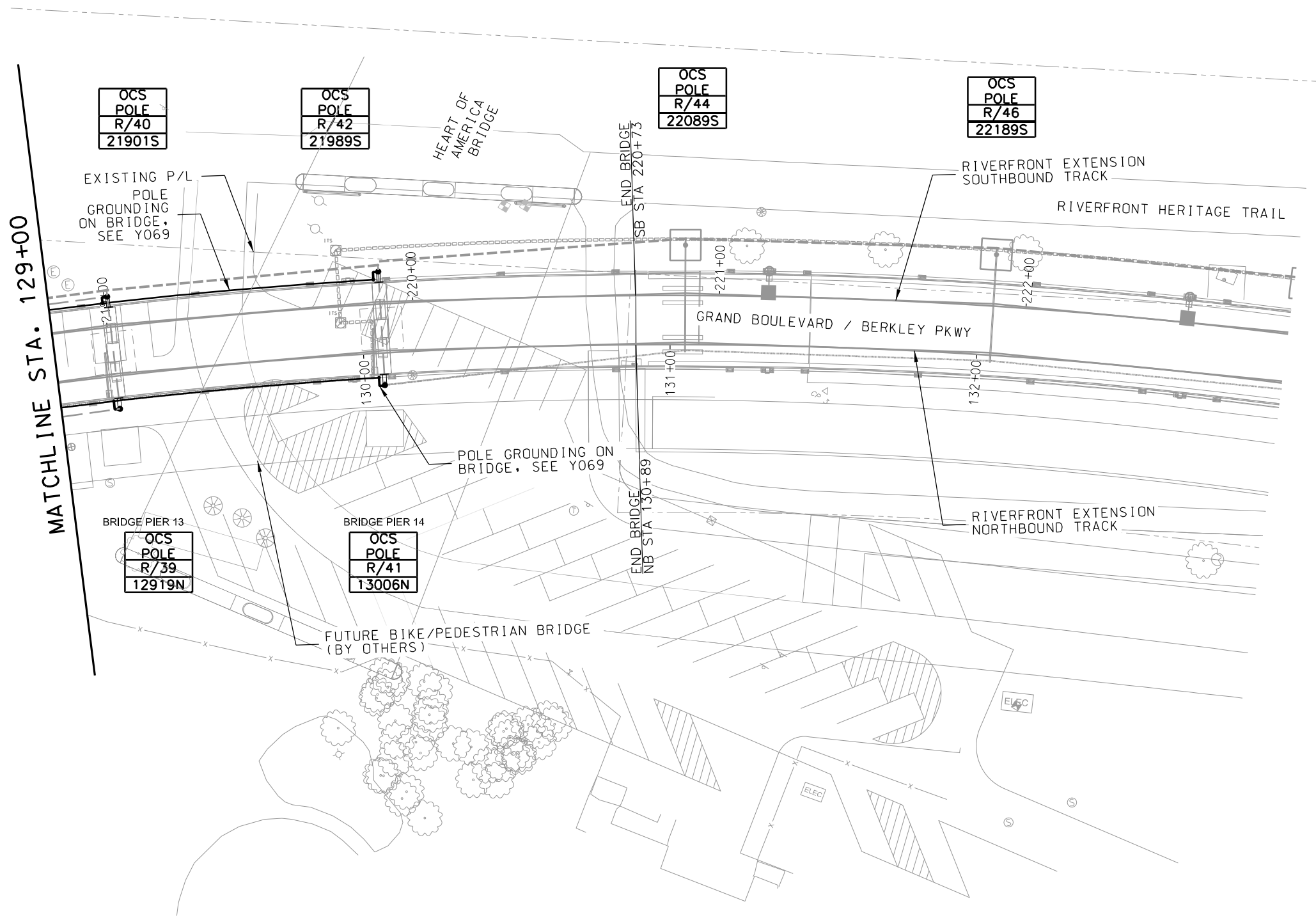
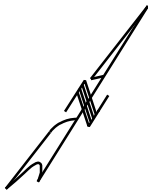
REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20'
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			DRAWN BY	DC								CONTRACT NO.:
			CHECKED BY	BP								CONTRACT NO. ***
			APPROVED BY	NKS								VOLUME: 1
PLOT DATE: 12/22/2022			12:14:16 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:		SHEET NO.:	
									Y213		397	



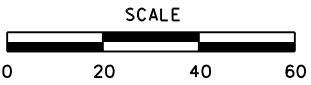
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REV	DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 20'	
			CHECKED BY	BP				HDR Engineering, Inc.			FILENAME: Y214.dgn
			DRAWN BY	DC			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270		CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY	BP			NOT FOR CONSTRUCTION			VOLUME: 1	
			APPROVED BY	NKS						DRAWING NO.: SHEET NO.: Y214 398	
PLOT DATE: 12/22/2022			12:14:25 PM		DATE 12-23-2022						



- NOTES:**
- 1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 - 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
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 - 4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.

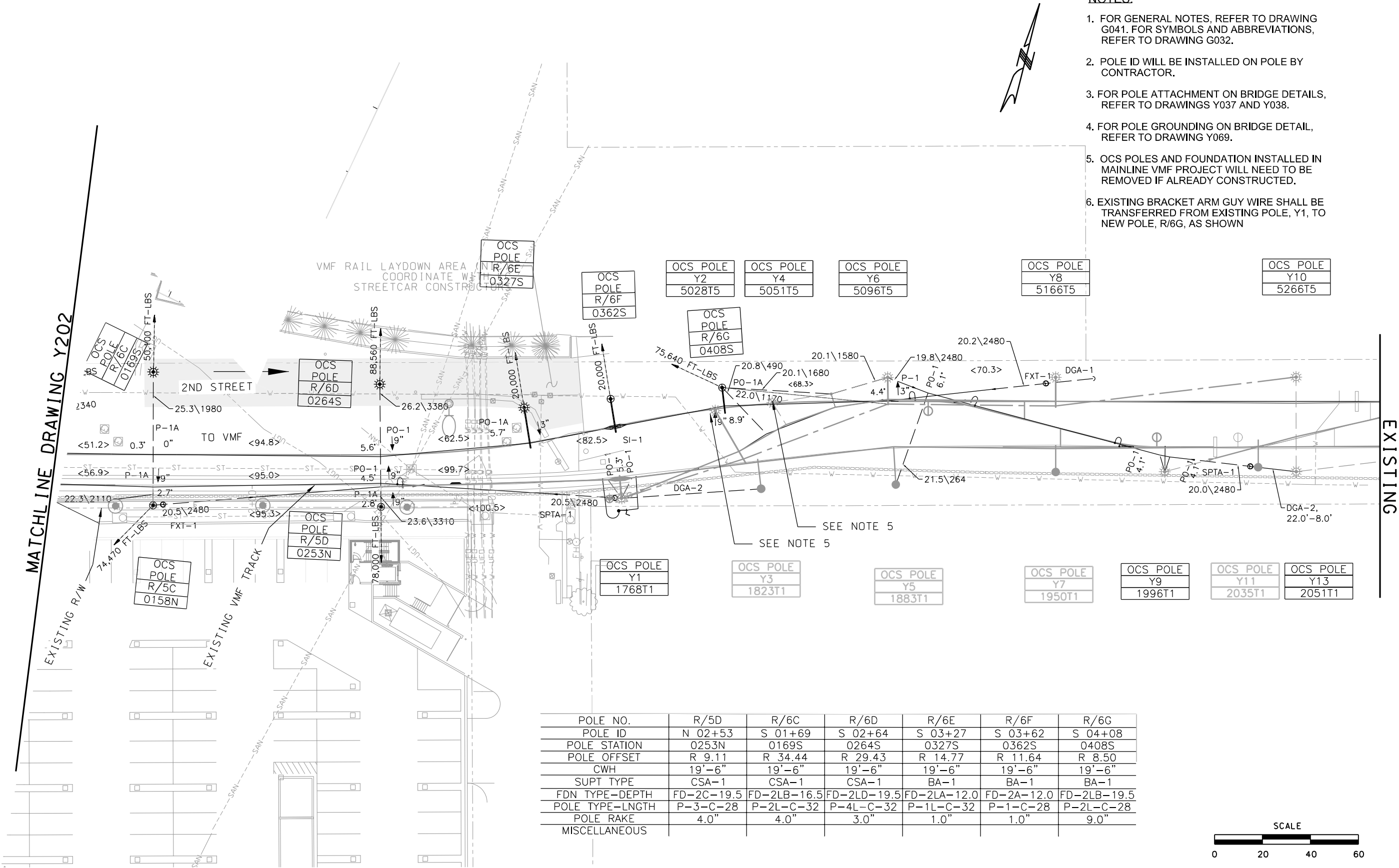


REV			DATE	DESCRIPTION	DESIGNED BY	PFW			ISSUE FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": H: 1" = 20'	
					CHECKED BY	BP						OCS BRIDGE GROUNDING LAYOUT PLAN		FILENAME: Y215.dgn	
					DRAWN BY	DC						STA 129+00 TO STA 133+00		CONTRACT NO.:	
					CHECKED BY	BP			10450 Holmes Road					CONTRACT NO. ***	
					APPROVED BY	NKS			Suite 600					VOLUME:	
PLOT DATE: 12/22/2022			12:14:36 PM	DATE	12-23-2022				Kansas City, MO 64105					DRAWING NO.:	
									816-360-2700					SHEET NO.:	
									Certificate of Authority: 000856					Y215	
									Certificate of Authority: 001270					399	
									NOT FOR CONSTRUCTION						

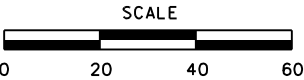
NOTES:

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3. FOR POLE ATTACHMENT ON BRIDGE DETAILS, REFER TO DRAWINGS Y037 AND Y038.
4. FOR POLE GROUNDING ON BRIDGE DETAIL, REFER TO DRAWING Y069.
5. OCS POLES AND FOUNDATION INSTALLED IN MAINLINE VMF PROJECT WILL NEED TO BE REMOVED IF ALREADY CONSTRUCTED.
6. EXISTING BRACKET ARM GUY WIRE SHALL BE TRANSFERRED FROM EXISTING POLE, Y1, TO NEW POLE, R/6G, AS SHOWN

MATCHLINE DRAWING Y202



POLE NO.	R/5D	R/6C	R/6D	R/6E	R/6F	R/6G
POLE ID	N 02+53	S 01+69	S 02+64	S 03+27	S 03+62	S 04+08
POLE STATION	0253N	0169S	0264S	0327S	0362S	0408S
POLE OFFSET	R 9.11	R 34.44	R 29.43	R 14.77	R 11.64	R 8.50
CWH	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"	19'-6"
SUPT TYPE	CSA-1	CSA-1	CSA-1	BA-1	BA-1	BA-1
FDN TYPE-DEPTH	FD-2C-19.5	FD-2LB-16.5	FD-2LD-19.5	FD-2LA-12.0	FD-2A-12.0	FD-2LB-19.5
POLE TYPE-LNGTH	P-3-C-28	P-2L-C-32	P-4L-C-32	P-1L-C-32	P-1-C-28	P-2L-C-28
POLE RAKE	4.0"	4.0"	3.0"	1.0"	1.0"	9.0"
MISCELLANEOUS						



REV	DATE	DESCRIPTION
PLOT DATE: 12/23/2022		9:48:21 AM

DESIGNED BY	PFW
CHECKED BY	BP
DRAWN BY	DC
CHECKED BY	BP
APPROVED BY	NKS
DATE	12-23-2022



ISSUE FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

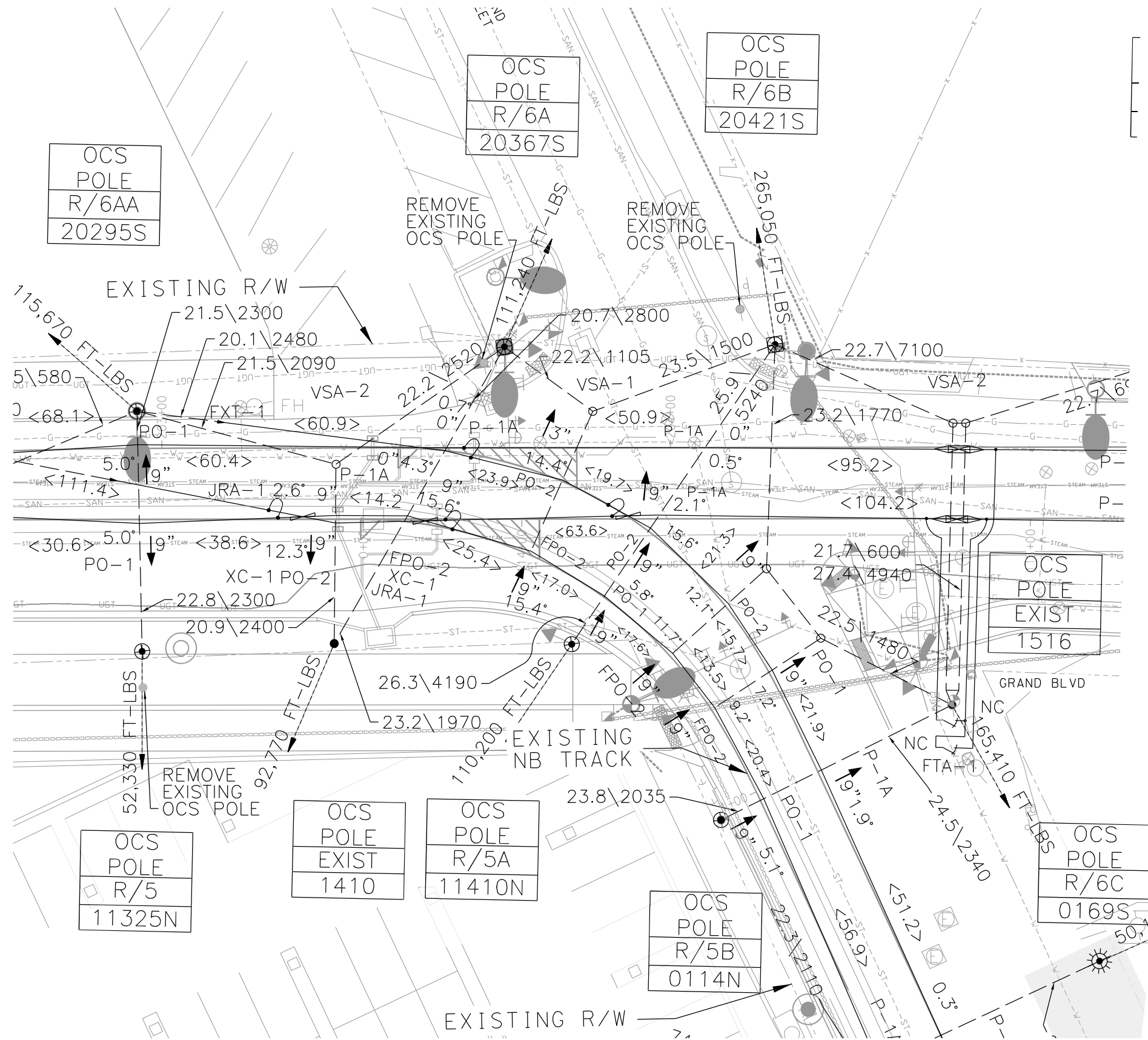
The HNTB Companies
715 Kirk Drive
Kansas City, MO 64105
816-472-1201
Certificate of Authority: 001270

NOT FOR CONSTRUCTION

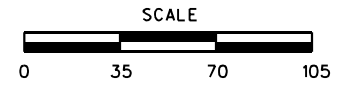
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

OCS LAYOUT PLAN
2ND STREET TO VMF

SCALE FOR 22"x34": H: 1" = 20'	FILENAME:
\$FILES\$	CONTRACT NO.:
\$CONTRACT\$	VOLUME:
\$VOLUME\$	DRAWING NO.:
Y216	SHEET NO.:
400	



- NOTES:**
1. FOR GENERAL NOTES, REFER TO DRAWING G041. FOR SYMBOLS AND ABBREVIATIONS, REFER TO DRAWING G032.
 2. POLE ID WILL BE INSTALLED ON POLE BY CONTRACTOR.
 3. OCS POLES R/1, R/3 AND R/5 ARE TO BE INSTALLED IN CONTAMINATED SOIL LOCATION. CONTAMINATED SOIL SHALL BE REMOVE IN ACCORDANCE WITH ALL STATE AND FEDERAL REGULATIONS BY CONTRACTOR .
 4. REMOVAL OF EXISTING OCS POLES TO BE DONE AFTER THE EXISTING AND PROPOSED OCS HAS BEEN FULLY SUPPORTED AS PER DESIGN DRAWINGS AS PART OF THIS CONTRACT. AFTER REMOVAL OF OCS POLES, EXISTING OCS FOUNDATIONS TO BE DEMOLISHED TO AT LEAST 3 FEET BELOW GRADE. CONTRACTOR TO COORDINATE REMOVAL AND DEMO OF EXISTING OCS POLES AND FOUNDATIONS WITH ALL IMPACTED DISCIPLINES.
 5. CONTRACTOR MAY USE EXISTING OCS ASSEMBLIES FOR THE EXISTING ALIGNMENT. ALLOCATED OCS ASSEMBLIES AT THESE LOCATIONS TO BE USED WHEN EXISTING ASSEMBLIES ARE NO LONGER VIALBE DUE TO THE PROPOSED WORK.
 6. INTERFACE WITH THE EXISTING SYSTEM HAS BEEN DESIGN BASED ON EXISTING POLE DATA FROM "KANSAS CITY DOWNTOWN STREETCAR PROJECT - VOLUME 4 - SYSTEMS" DATED MARCH 2014. POLE AND FOUNDATIONS SIZES HAVE NOT BEEN CONFIRMED BY HNTB.



REV DATE DESCRIPTION			DESIGNED BY PFW				ISSUE FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34":	
			CHECKED BY BP										FILENAME:	
			DRAWN BY DC				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		The HNTB Companies 715 Kirk Drive Kansas City, MO 64105 816-472-1201 Certificate of Authority: 001270				CONTRACT NO.:	
			CHECKED BY BP										CONTRACT \$	
			APPROVED BY NKS								VOLUME:		DRAWING NO.:	
PLOT DATE: 12/22/2022			DATE: 12-23-2022				NOT FOR CONSTRUCTION				Y217		401	

**OCS LAYOUT PLAN
LARGE SCALE**

ER OPTIC COMMUNICATION SCHEDULES																	
RUN ID	FROM			TO		NUMBER OF DUCTS - SIZE - TYPE				CONDUIT LENGTH	CABLE LENGTH, INCLUDING SLACK (LF.)	INSTALL NEW		FIBER OPTIC SPLICE VAULTS	SPLICE CLOSURES	CABLE SPLICE (x12 STRANDS)	SPLICING NOTES (FROM LOCATION)
	SPLICE VAULT ID	STATION	OFFSET	SPLICE VAULT ID	STATION	OFFSET											
		NORTHING	EASTING				1.5"HDPE	4"SCH80 PVC	2"SCH80 PVC	3" PGRS W/ INNERDUCT			96 SMFO	12 SMFO	(FROM LOCATION)		
101	1-1	109+97	-37.9186	1-2	110+06	19.2755					56	176		2			
	1-1	109+97	-37.9186	TRAF	109+92	-36.2188					10	130		1			TO TRAFFIC CABINET
	1-1	109+97	-37.9186	3RD-RC	109+88	-36.2188					10	130		1			TO TRAIN CONTROL CABINET
102	1-2	110+06	19.2755	1-3	111+00	65.74					100	220		2			
103	1-3	111+00	65.74	1-4	112+43	57.4451					139	259	1			28	RESPLICE IN EX. SPLICE CLOSURE
	1-3	111+00	65.74	STA ITS CAB	112+08	-31.545					164	404		1			TO STATION ITS CABINET *
104	1-4	112+43	57.4451	1-5	114+17	40.8					158	278	1				EX. 12 SMFO PRESENT, TO REMAIN
105	1-5	114+17	40.8	1-6	114+84	29.33					68	188	1	1			EX. 12 SMFO PRESENT, TO REMAIN
	1-5	114+17	40.8	2ND-RC	114+31	57.1649					21	201		1			TO TRAIN CONTROL CABINET *
106	1-6	114+84	29.33	1-7	115+20	25.76	1				37	157	1	1			
107	1-7	115+20	25.76	1-8	115+21	-26.97	1				53	173	1	1	1	1	2
108	1-8	115+21	-26.97	1-9	118+55	-31.59	1				337	457	1		1		
	1-8	115+21	-26.97	TRAF	114+46	-49.6905					82	262		1			TO TRAFFIC CABINET *
109	1-9	118+55	-31.59	1-10	118+55	-10.71	1				21	141	1		1		
110	1-10	118+55	-10.71	1-11	126+68	-7.87				1	1281	1401	1		1		
111	1-11	126+68	-7.87	1-12	126+75	-10.39				1	127	247	2				
112	1-12	126+75	-10.39	TPSS	127+08	-25.82	1				44	364		1	1	1	1
113	1-11	126+68	-7.87	1-13	129+94	-10.64				1	1314	1434	1		1		TO TPSS SITE +
																	TRANSITION BOX
114	1-13	129+94	-10.64	1-14	129+93	-34.29	1				24	144	1		1		
115	1-14	129+93	-34.29	1-15	135+78	-33.53	1				597	717	1		1		
116	1-15	135+78	-33.53	1-16	146+24	18.29		1	1		1088	1208	1		1	1	2
	1-15	135+78	-33.53	TRAF	135+60	-29.543					8	128		1			TO TRAFFIC CABINET *
	1-15	135+78	-33.53	FRNT-RC	135+66	-35.9478					15	135		1			TO TRAIN CONTROL CABINET *
117	1-16	146+24	18.29	1-17	151+13	10.3		1	1		501	621	1		1	1	
	1-16	146+24	18.29	RIVR-RC	146+16	11.7164					10	130		1			TO TRAIN CONTROL CABINET *
118	1-17	151+13	10.3	1-18	151+13	-44.23		1	1		51	171			1		EMPTY, FOR FUTURE USE
	1-17	151+13	10.3	STA ITS CAB	150+82	-34.3458					51	291		1	1	1	1
																	TO STATION ITS CABINET *

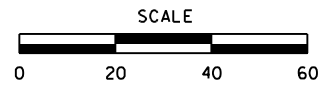
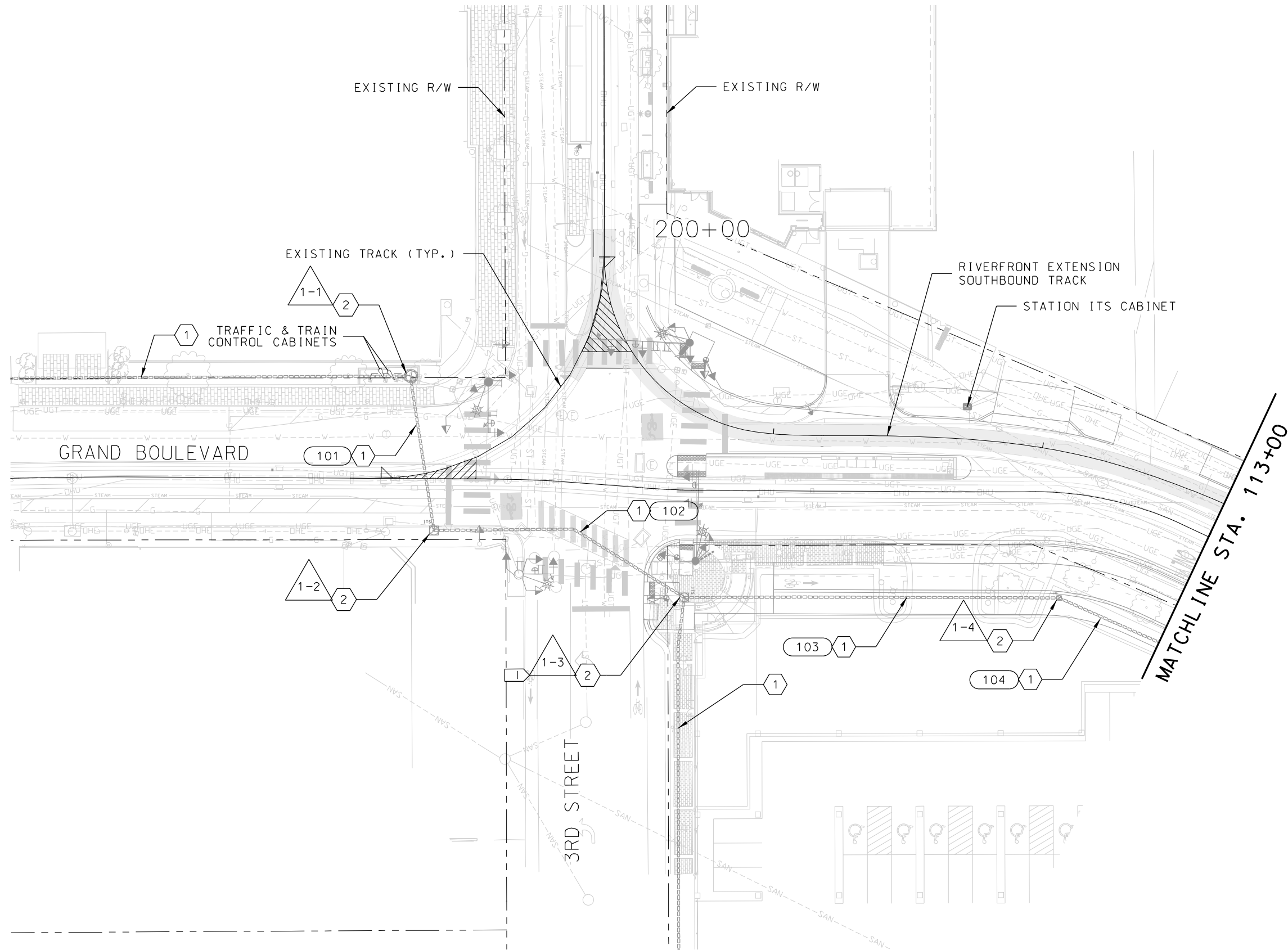
QUANTITY NOTES:
* CONDUITS QUANTIFIED AS PART OF TRAFFIC, TRAIN CONTROL, AND STATION PLANS. SEE LOCATION AND DISCIPLINE-SPECIFIC SHEETS FOR ADDITIONAL DETAIL ON CONNECTION.

+ SEE TPSS PLANS FOR ADDITIONAL DETAIL ON CONNECTION

COMMUNICATION QUANTITIES			
ITEM	UNIT	TOTAL QUANTITY/LENGTH	NOTES
1.5" HDPE CONDUIT TOTAL	LF.	1,076	
4"-SCH-80 PVC CONDUIT TOTAL	LF.	1,640	
2"-SCH-80 PVC CONDUIT TOTAL	LF.	1,640	
3" PGRS W/ INNERDUCT CONDUIT TOTAL	LF.	2,722	
FIBER OPTIC SPLICE VAULTS (30X48)	EA.	8	
FIBER OPTIC SPLICE VAULTS (TYPE 5)	EA.	4	
SPLICE CLOSURES	EA.	5	
CABLE SPLICE 12-STRANDS	EA.	12	
96-STRAND SMFO CABLE	LF.	7,572	
12-STRAND SMFO CABLE	LF.	3,485	
BRIDGE-MOUNT NEMA TRANSITION BOX	EA.	1	

NOTE: PROJECT COORDINATES SHOWN ARE BASED ON THE MISSOURI STATE PLANE COORDINATE SYSTEM, WEST ZONE, NAD 83, VERTICAL DATUM IS NAVD 88 AND IS SHOWN IN U.S. SURVEY FEET.

REV	DATE	DESCRIPTION	DESIGNED BY AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Z001.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: 1	DRAWING NO.: Z001	SHEET NO.: 402
			CHECKED BY JLM				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				
			DRAWN BY ZJ								
			CHECKED BY AJW								
			APPROVED BY NKS								
PLOT DATE: 12/22/2022 4:30:15 PM			DATE 12-23-2022			NOT FOR CONSTRUCTION		COMMUNICATIONS SCHEDULES			



KEYED NOTES

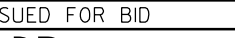
- 1 PROTECT-IN-PLACE EX. CONDUIT
- 2 PROTECT-IN-PLACE EX. VAULT
- 3 PR. TYPE 5 FIBER OPTIC SPLICE VAULT
- 4 PR. CONDUIT PER SCHEDULE
- 5 PR. SMFO CABLE PER SCHEDULE
- 6 PR. 30" x 48" FIBER OPTIC SPLICE VAULT
- 7 PR. NEMA 4X ENCLOSURE
- xxx PR. CONDUIT ID PER SCHEDULE
- x-x SPLICE VAULT ID PER SCHEDULE
- 1 EX. VAULT WITH EX. SPLICE ENCLOSURE, WITH PR. SPLICES

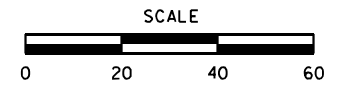
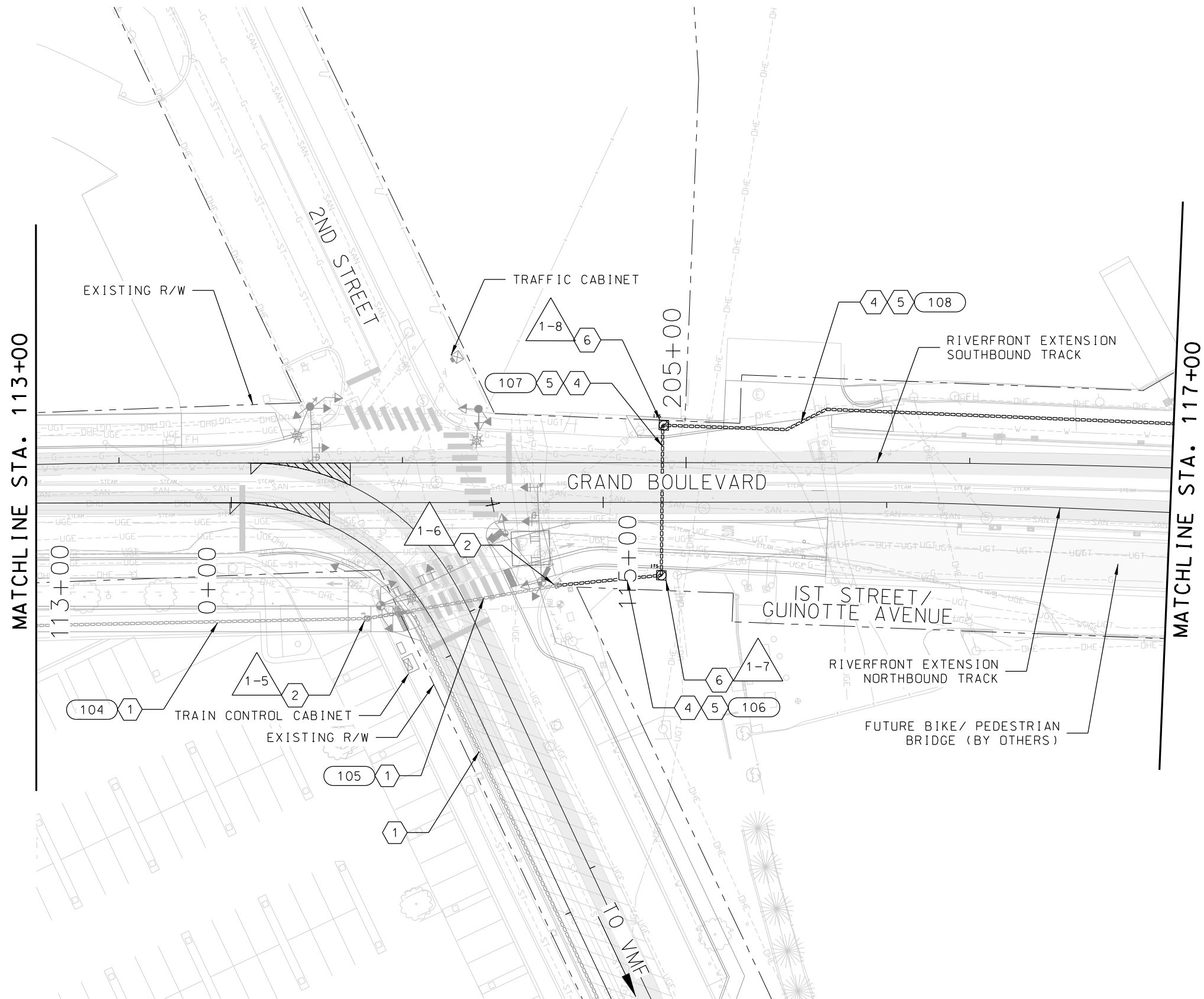
LEGEND

- PR. VAULT
- PR. COMM
- EX. COMM

GENERAL NOTES

- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
- ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
- LATERAL BENDS FOR SPLICE VAULTS LOCATED TO THE WAYSIDE OF THE TRACK SLAB SHALL BE FACTORY-MADE BENDS.
- CONTRACTOR TO COORDINATE FINAL TOP ELEVATION OF ALL CONDUITS, UNLESS OTHERWISE NOTED ON PLAN SHEETS. ALL CONDUITS TO BE SLOPED A MINIMUM OF 1 INCH PER 100 FEET TOWARDS SPLICE VAULTS FOR POSITIVE DRAINAGE.
- FIBER CONNECTIONS TO TRACTION POWER SITES, TRAFFIC SIGNAL CABINETS, TRAIN CONTROL CABINETS, AND STATION COMMUNICATION CABINETS ARE SHOWN IN DISCIPLINE-SPECIFIC DRAWINGS.
- REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISTING KCMO FIBER.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS PLAN STA BEGIN TO STA 113+00	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	JLM				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			FILENAME: Z10.dgn	
			DRAWN BY	ZJ							CONTRACT NO.:	
											CONTRACT NO. ***	
			CHECKED BY	AJW							VOLUME:	
			APPROVED BY	NKS							DRAWING NO.:	SHEET NO.:
PLOT DATE: 12/22/2022		4:30:22 PM	DATE	12-23-2022	NOT FOR CONSTRUCTION		Z101	403				



KEYED NOTES

- ① PROTECT-IN-PLACE EX. CONDUIT
- ② PROTECT-IN-PLACE EX. VAULT
- ③ PR. TYPE 5 FIBER OPTIC SPLICE VAULT
- ④ PR. CONDUIT PER SCHEDULE
- ⑤ PR. SMFO CABLE PER SCHEDULE
- ⑥ PR. 30" x 48" FIBER OPTIC SPLICE VAULT
- ⑦ PR. NEMA 4X ENCLOSURE
- xxx PR. CONDUIT ID PER SCHEDULE
- x-x SPLICE VAULT ID PER SCHEDULE
- ① INFRASTRUCTURE IS MOUNTED TO BRIDGE

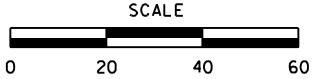
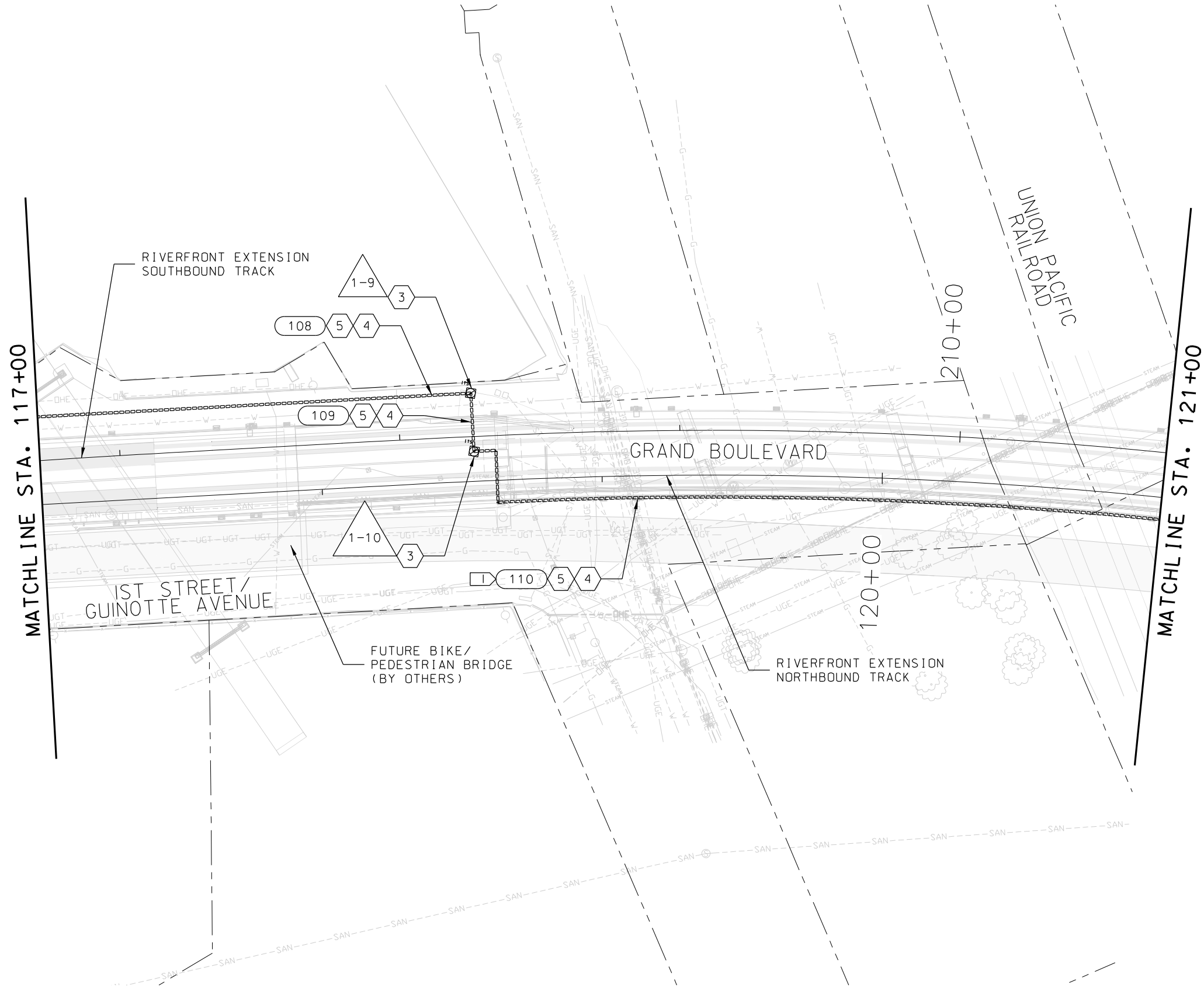
LEGEND

- PR. VAULT
- PR. COMM
- EX. COMM

GENERAL NOTES

- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
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- REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISTING KCMO FIBER.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW		 JAMES MERSEREAU - ENGINEER LICENSE NO. 2021043237	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20' FILENAME: Z102.dgn CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.:				
			CHECKED BY	JLM			 HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		COMMUNICATIONS PLAN STA 113+00 TO STA 117+00		Z102	404	
			DRAWN BY	ZJ										
			CHECKED BY	AJW										
			APPROVED BY	NKS										
PLOT DATE: 12/23/2022		3:30h13 PM	DATE	12-23-2022										



KEYED NOTES

- ① PROTECT-IN-PLACE EX. CONDUIT
- ② PROTECT-IN-PLACE EX. VAULT
- ③ PR. TYPE 5 FIBER OPTIC SPLICE VAULT
- ④ PR. CONDUIT PER SCHEDULE
- ⑤ PR. SMFO CABLE PER SCHEDULE
- ⑥ PR. 30" x 48" FIBER OPTIC SPLICE VAULT
- ⑦ PR. NEMA 4X ENCLOSURE
- xxx PR. CONDUIT ID PER SCHEDULE
- x-x SPLICE VAULT ID PER SCHEDULE
- ① INFRASTRUCTURE IS MOUNTED TO BRIDGE

LEGEND

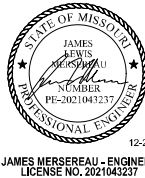
- PR. VAULT
- PR. COMM
- EX. COMM

GENERAL NOTES

- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
- ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
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- REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISITING KCMO FIBER.

REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		4:30:29 PM

DESIGNED BY	AJW
CHECKED BY	JLM
DRAWN BY	ZJ
CHECKED BY	AJW
APPROVED BY	NKS
DATE	12-23-2022

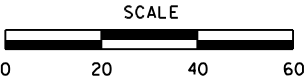
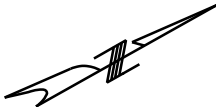
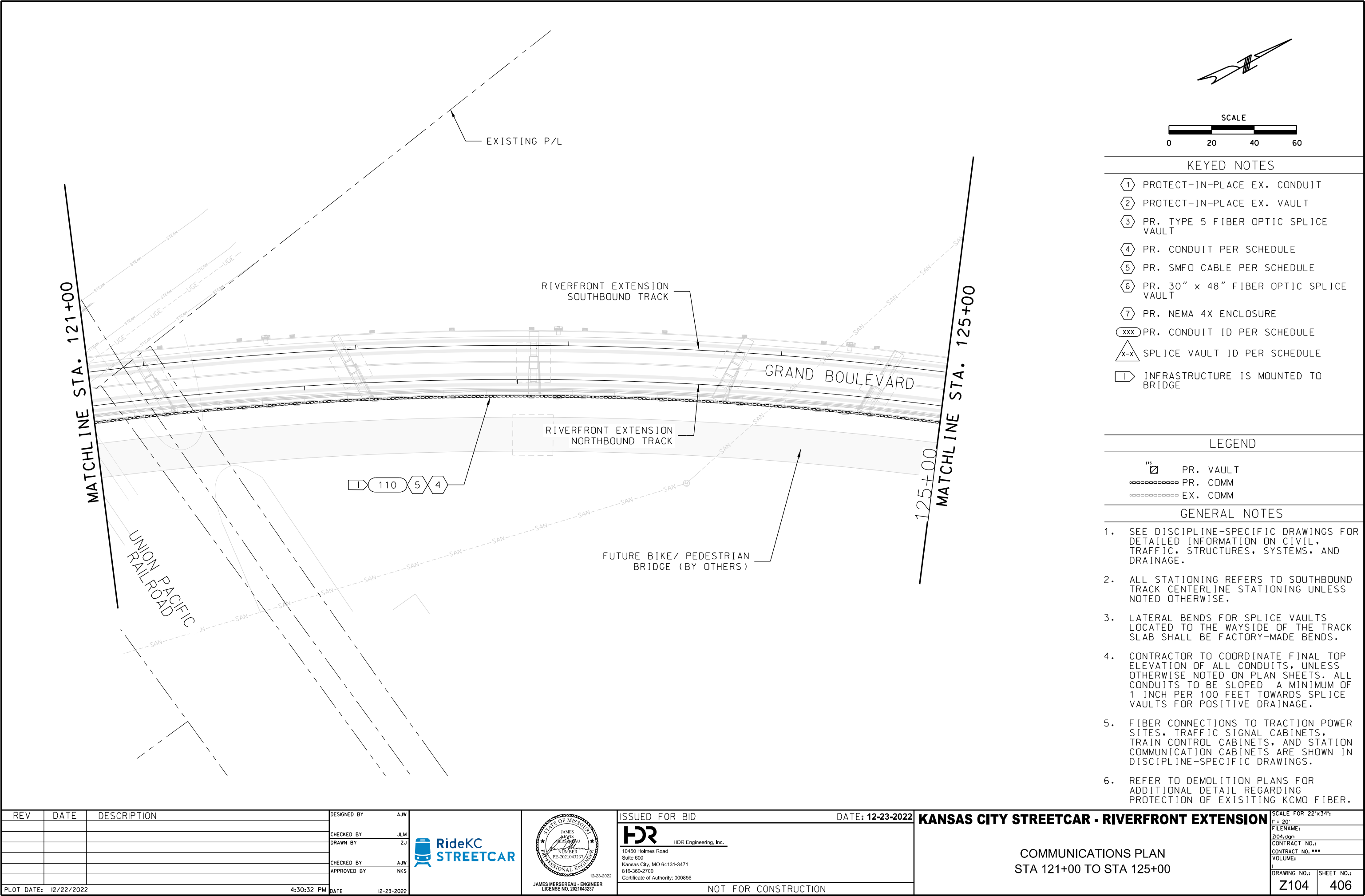


ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

COMMUNICATIONS PLAN
STA 117+00 TO STA 121+00

SCALE FOR 22"x34": 1" = 20'	
FILENAME: Z103.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.:	SHEET NO.:
Z103	405



KEYED NOTES

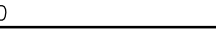
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- ② PROTECT-IN-PLACE EX. VAULT
- ③ PR. TYPE 5 FIBER OPTIC SPLICE VAULT
- ④ PR. CONDUIT PER SCHEDULE
- ⑤ PR. SMFO CABLE PER SCHEDULE
- ⑥ PR. 30" x 48" FIBER OPTIC SPLICE VAULT
- ⑦ PR. NEMA 4X ENCLOSURE
- xxx PR. CONDUIT ID PER SCHEDULE
- x-x SPLICE VAULT ID PER SCHEDULE
- ① INFRASTRUCTURE IS MOUNTED TO BRIDGE

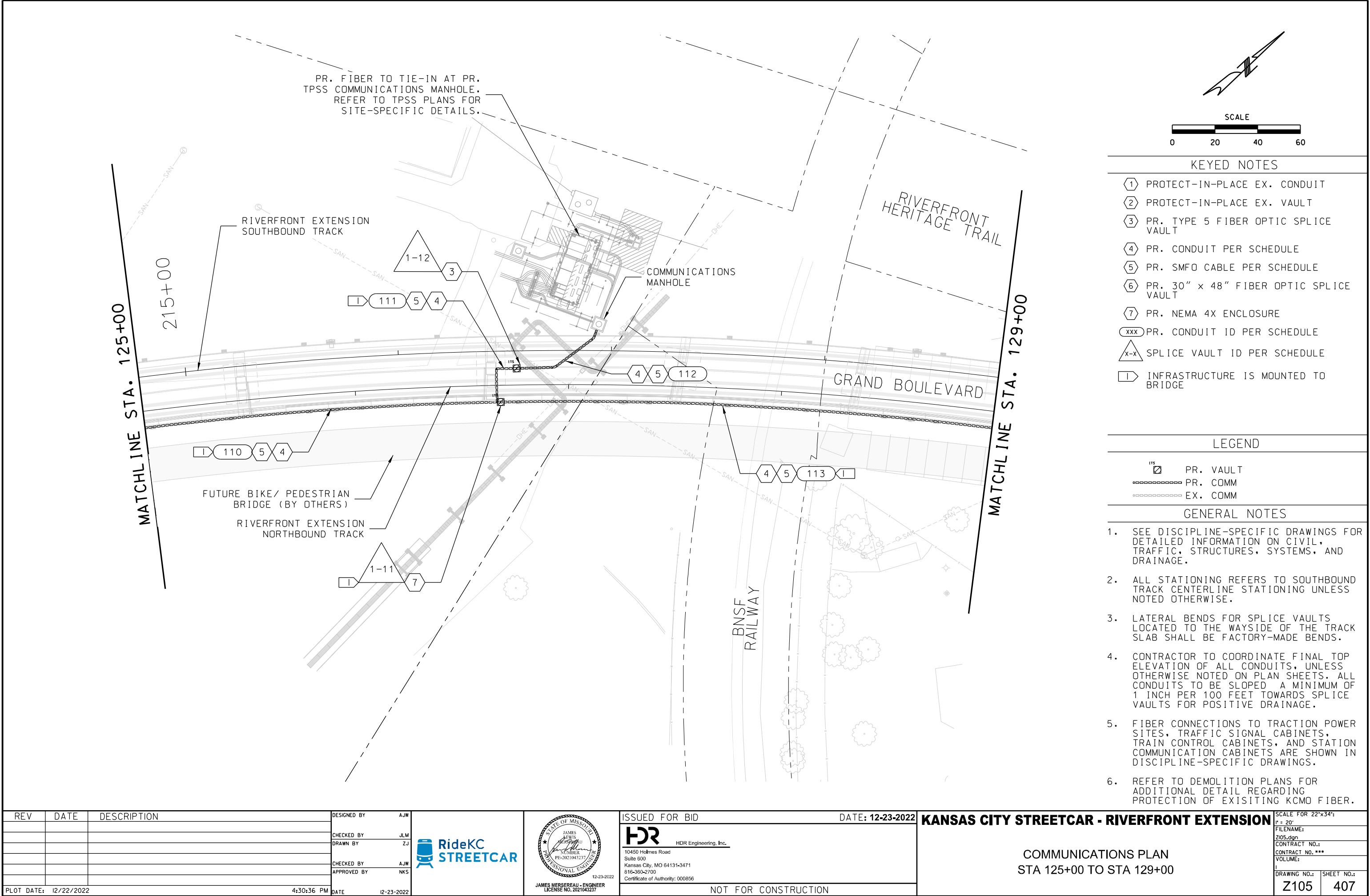
LEGEND

- PR. VAULT
- PR. COMM
- EX. COMM

GENERAL NOTES

- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
- ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
- LATERAL BENDS FOR SPLICE VAULTS LOCATED TO THE WAYSIDE OF THE TRACK SLAB SHALL BE FACTORY-MADE BENDS.
- CONTRACTOR TO COORDINATE FINAL TOP ELEVATION OF ALL CONDUITS, UNLESS OTHERWISE NOTED ON PLAN SHEETS. ALL CONDUITS TO BE SLOPED A MINIMUM OF 1 INCH PER 100 FEET TOWARDS SPLICE VAULTS FOR POSITIVE DRAINAGE.
- FIBER CONNECTIONS TO TRACTION POWER SITES, TRAFFIC SIGNAL CABINETS, TRAIN CONTROL CABINETS, AND STATION COMMUNICATION CABINETS ARE SHOWN IN DISCIPLINE-SPECIFIC DRAWINGS.
- REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISTING KCMO FIBER.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS PLAN STA 121+00 TO STA 125+00	SCALE FOR 22"x34": 1" = 20'
			CHECKED BY	JLM				HDR Engineering, Inc.			
			DRAWN BY	ZJ							
			CHECKED BY	AJW							
			APPROVED BY	NKS							
PLOT DATE: 12/22/2022		4:30:32 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.: Z104		SHEET NO.: 406	



- KEYED NOTES
- 1

PROTECT-IN-PLACE EX. CONDUIT
- 2

PROTECT-IN-PLACE EX. VAULT
- 3

PR. TYPE 5 FIBER OPTIC SPLICE VAULT
- 4

PR. CONDUIT PER SCHEDULE
- 5

PR. SMFO CABLE PER SCHEDULE
- 6

PR. 30" x 48" FIBER OPTIC SPLICE VAULT
- 7

PR. NEMA 4X ENCLOSURE
- xxx

PR. CONDUIT ID PER SCHEDULE
- x-x

SPLICE VAULT ID PER SCHEDULE
- 1

INFRASTRUCTURE IS MOUNTED TO BRIDGE

- LEGEND
- 115

PR. VAULT
- PR. COMM
- EX. COMM

- GENERAL NOTES
1.

SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
2.

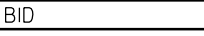
ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
3.

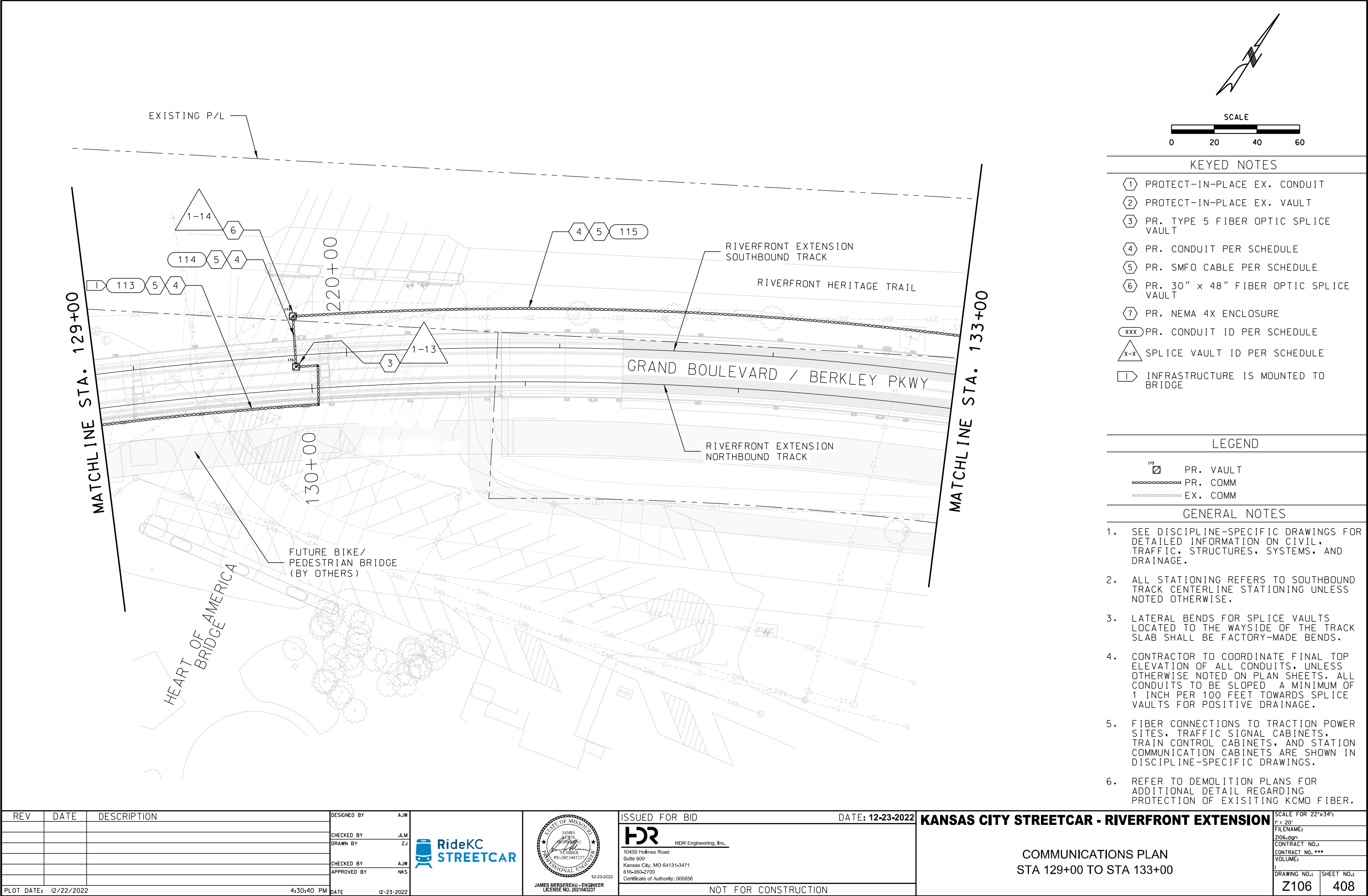
LATERAL BENDS FOR SPLICE VAULTS LOCATED TO THE WAYSIDE OF THE TRACK SLAB SHALL BE FACTORY-MADE BENDS.
4.

CONTRACTOR TO COORDINATE FINAL TOP ELEVATION OF ALL CONDUITS, UNLESS OTHERWISE NOTED ON PLAN SHEETS. ALL CONDUITS TO BE SLOPED A MINIMUM OF 1 INCH PER 100 FEET TOWARDS SPLICE VAULTS FOR POSITIVE DRAINAGE.
5.

FIBER CONNECTIONS TO TRACTION POWER SITES, TRAFFIC SIGNAL CABINETS, TRAIN CONTROL CABINETS, AND STATION COMMUNICATION CABINETS ARE SHOWN IN DISCIPLINE-SPECIFIC DRAWINGS.
6.

REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISITING KCMO FIBER.

REV		DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'		
				CHECKED BY	JLM				HDR Engineering, Inc.				FILENAME:		
				DRAWN BY	ZJ				10450 Holmes Road				Z105.dgn		
									Suite 600				CONTRACT NO.:		
				CHECKED BY	AJW			Kansas City, MO 64131-3471					CONTRACT NO. ***		
				APPROVED BY	NKS	816-360-2700				VOLUME:					
						Certificate of Authority: 000856						DRAWING NO.:			
												SHEET NO.:			
PLOT DATE:		12/22/2022		4:30:36 PM		DATE 12-23-2022		NOT FOR CONSTRUCTION				Z105		407	



- KEYED NOTES
- 1 PROTECT-IN-PLACE EX. CONDUIT
 - 2 PROTECT-IN-PLACE EX. VAULT
 - 3 PR. TYPE 5 FIBER OPTIC SPLICE VAULT
 - 4 PR. CONDUIT PER SCHEDULE
 - 5 PR. SMFO CABLE PER SCHEDULE
 - 6 PR. 30" x 48" FIBER OPTIC SPLICE VAULT
 - 7 PR. NEMA 4X ENCLOSURE
 - xxx PR. CONDUIT ID PER SCHEDULE
 - x-x SPLICE VAULT ID PER SCHEDULE
 - 1 INFRASTRUCTURE IS MOUNTED TO BRIDGE

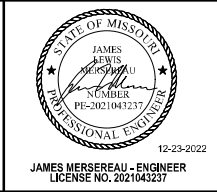
- LEGEND
- PR. VAULT
 - PR. COMM
 - EX. COMM

- GENERAL NOTES
- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
 - ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
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 - REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISITING KCMO FIBER.

REV	DATE	DESCRIPTION

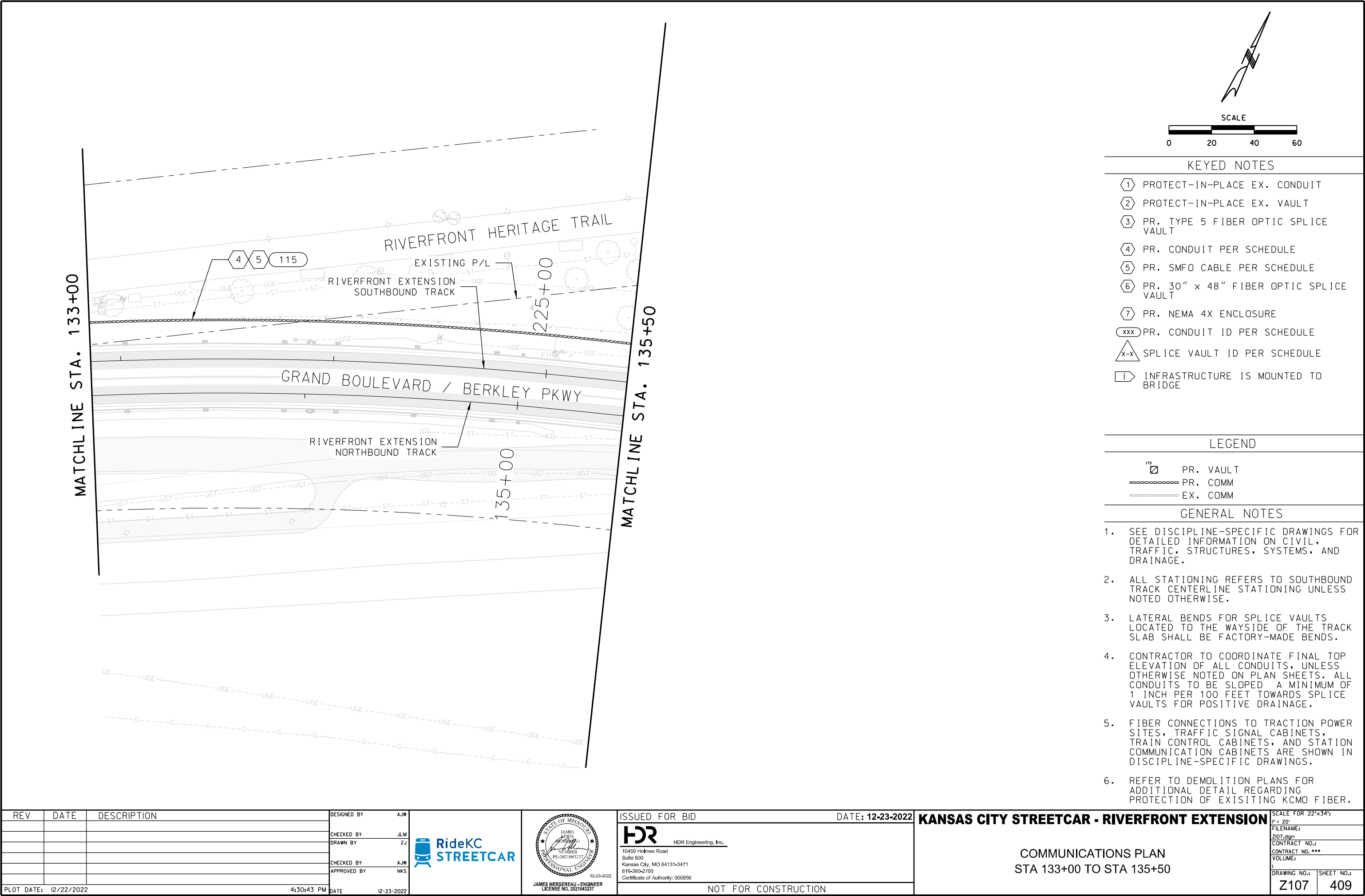
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DESIGNED BY	AJW
CHECKED BY	JLM
DRAWN BY	ZJ
CHECKED BY	AJW
APPROVED BY	NKS



ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

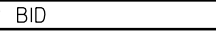
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 20'
COMMUNICATIONS PLAN STA 129+00 TO STA 133+00		FILENAME: Z106.dgn
		CONTRACT NO.: CONTRACT NO. ***
		VOLUME:
DRAWING NO.:	SHEET NO.:	
Z106	408	

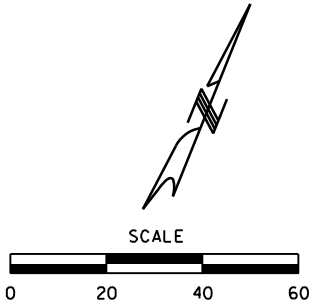
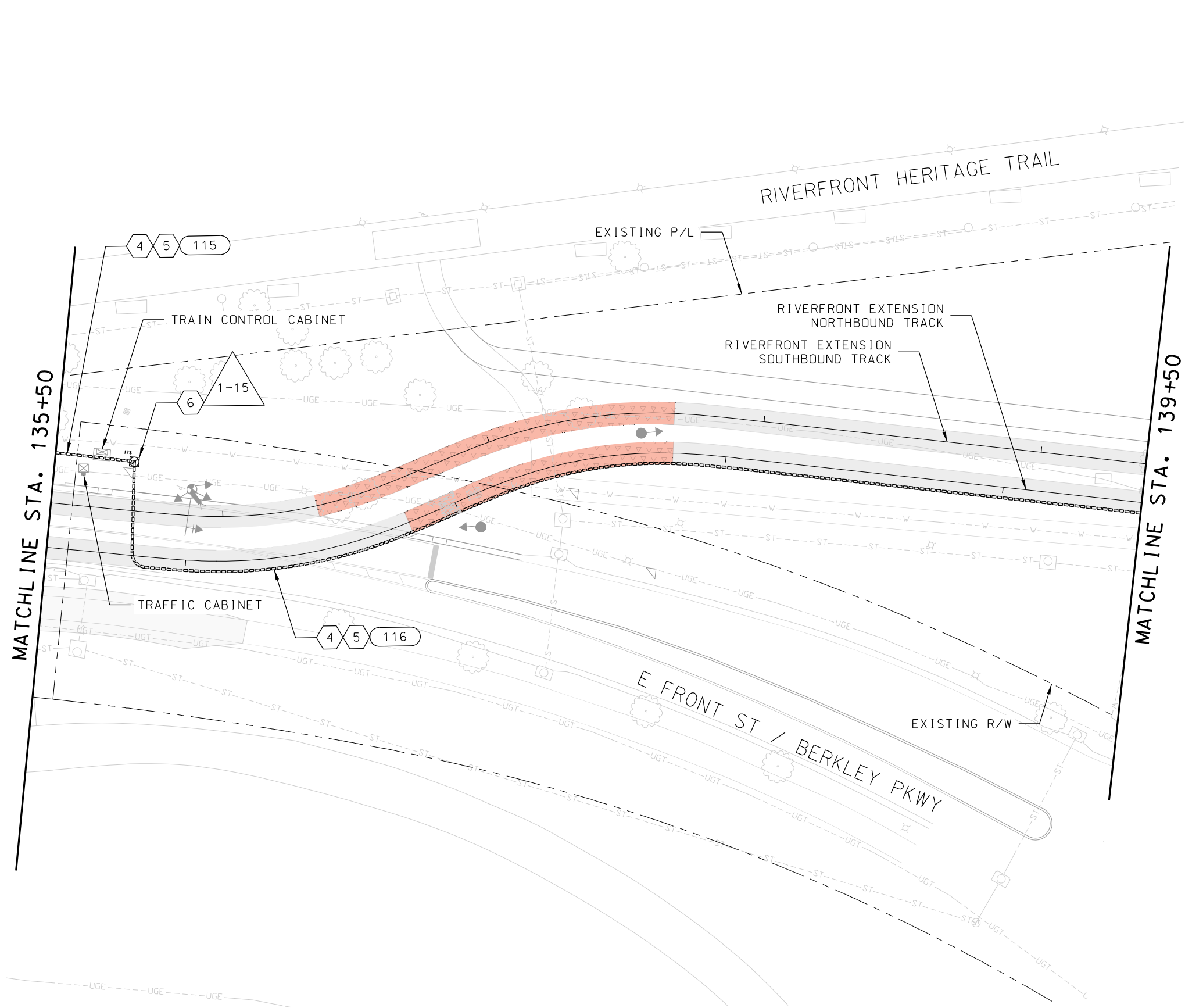


KEYED NOTES	
①	PROTECT-IN-PLACE EX. CONDUIT
②	PROTECT-IN-PLACE EX. VAULT
③	PR. TYPE 5 FIBER OPTIC SPLICE VAULT
④	PR. CONDUIT PER SCHEDULE
⑤	PR. SMFO CABLE PER SCHEDULE
⑥	PR. 30" x 48" FIBER OPTIC SPLICE VAULT
⑦	PR. NEMA 4X ENCLOSURE
xxx	PR. CONDUIT ID PER SCHEDULE
x-x	SPLICE VAULT ID PER SCHEDULE
1	INFRASTRUCTURE IS MOUNTED TO BRIDGE

LEGEND	
	PR. VAULT
	PR. COMM
	EX. COMM

GENERAL NOTES	
1.	SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
2.	ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
3.	LATERAL BENDS FOR SPLICE VAULTS LOCATED TO THE WAYSIDE OF THE TRACK SLAB SHALL BE FACTORY-MADE BENDS.
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REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":	
			CHECKED BY	JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			1" = 20'	FILENAME:
			DRAWN BY	ZJ						Z107.dgn	CONTRACT NO.:
			CHECKED BY	AJW							CONTRACT NO. ***
			APPROVED BY	NKS							VOLUME:
PLOT DATE: 12/22/2022			4:30:43 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:	
									Z107	409	



- KEYED NOTES
- ① PROTECT-IN-PLACE EX. CONDUIT
 - ② PROTECT-IN-PLACE EX. VAULT
 - ③ PR. TYPE 5 FIBER OPTIC SPLICE VAULT
 - ④ PR. CONDUIT PER SCHEDULE
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 - ⑦ PR. NEMA 4X ENCLOSURE
 - xxx PR. CONDUIT ID PER SCHEDULE
 - x-x SPLICE VAULT ID PER SCHEDULE
 - ① INFRASTRUCTURE IS MOUNTED TO BRIDGE

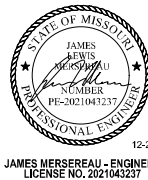
- LEGEND
- PR. VAULT
 - PR. COMM
 - EX. COMM

- GENERAL NOTES
- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
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 - REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISTING KCMO FIBER.

REV	DATE	DESCRIPTION

PLOT DATE: 12/22/2022 4:30:46 PM

DESIGNED BY	AJW
CHECKED BY	JLM
DRAWN BY	ZJ
CHECKED BY	AJW
APPROVED BY	NKS



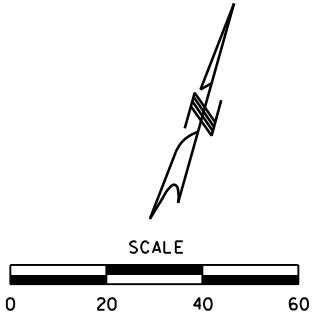
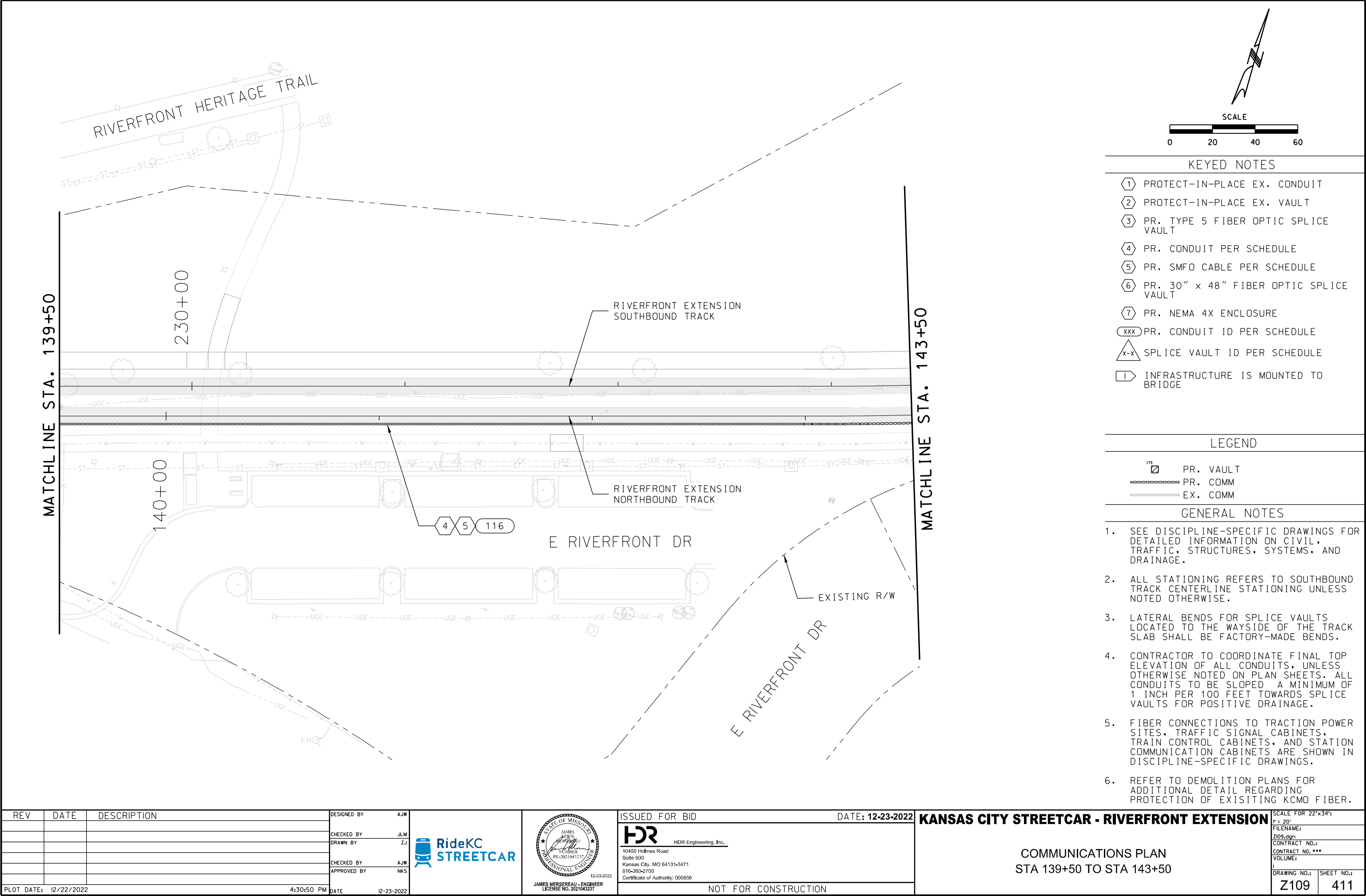
JAMES MERSEREAU - ENGINEER
LICENSE NO. 2021043237

ISSUED FOR BID	DATE: 12-23-2022
HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

COMMUNICATIONS PLAN
STA 135+50 TO STA 139+50

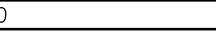
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FILENAME: Z108.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.: Z108	SHEET NO.: 410

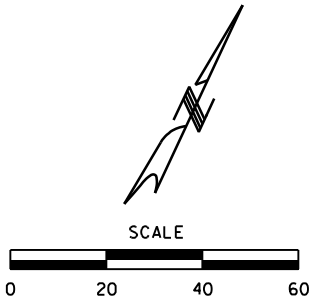
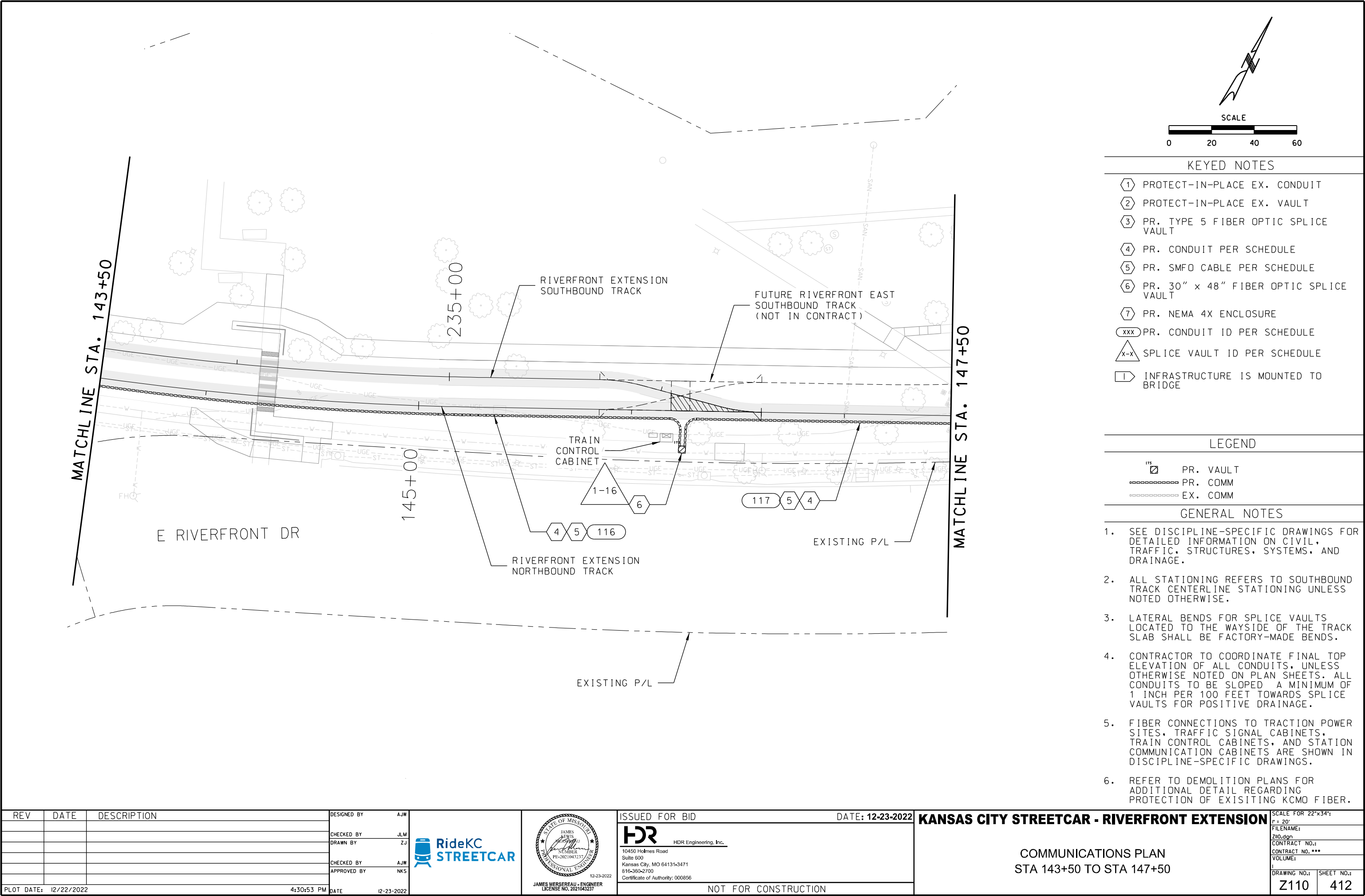


KEYED NOTES	
①	PROTECT-IN-PLACE EX. CONDUIT
②	PROTECT-IN-PLACE EX. VAULT
③	PR. TYPE 5 FIBER OPTIC SPLICE VAULT
④	PR. CONDUIT PER SCHEDULE
⑤	PR. SMFO CABLE PER SCHEDULE
⑥	PR. 30" x 48" FIBER OPTIC SPLICE VAULT
⑦	PR. NEMA 4X ENCLOSURE
xxx	PR. CONDUIT ID PER SCHEDULE
x-x	SPLICE VAULT ID PER SCHEDULE
1	INFRASTRUCTURE IS MOUNTED TO BRIDGE

LEGEND	
	PR. VAULT
	PR. COMM
	EX. COMM

GENERAL NOTES	
1.	SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
2.	ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
3.	LATERAL BENDS FOR SPLICE VAULTS LOCATED TO THE WAYSIDE OF THE TRACK SLAB SHALL BE FACTORY-MADE BENDS.
4.	CONTRACTOR TO COORDINATE FINAL TOP ELEVATION OF ALL CONDUITS, UNLESS OTHERWISE NOTED ON PLAN SHEETS. ALL CONDUITS TO BE SLOPED A MINIMUM OF 1 INCH PER 100 FEET TOWARDS SPLICE VAULTS FOR POSITIVE DRAINAGE.
5.	FIBER CONNECTIONS TO TRACTION POWER SITES, TRAFFIC SIGNAL CABINETS, TRAIN CONTROL CABINETS, AND STATION COMMUNICATION CABINETS ARE SHOWN IN DISCIPLINE-SPECIFIC DRAWINGS.
6.	REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISITING KCMO FIBER.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'		
			CHECKED BY	JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		COMMUNICATIONS PLAN STA 139+50 TO STA 143+50	FILENAME: Z109.dgn	
			DRAWN BY	ZJ							CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY	AJW							VOLUME: I	
			APPROVED BY	NKS							DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/22/2022			4:30:50 PM		DATE	12-23-2022			Z109 411			



KEYED NOTES

- ① PROTECT-IN-PLACE EX. CONDUIT
- ② PROTECT-IN-PLACE EX. VAULT
- ③ PR. TYPE 5 FIBER OPTIC SPLICE VAULT
- ④ PR. CONDUIT PER SCHEDULE
- ⑤ PR. SMFO CABLE PER SCHEDULE
- ⑥ PR. 30" x 48" FIBER OPTIC SPLICE VAULT
- ⑦ PR. NEMA 4X ENCLOSURE
- xxx PR. CONDUIT ID PER SCHEDULE
- x-x SPLICE VAULT ID PER SCHEDULE
- ① INFRASTRUCTURE IS MOUNTED TO BRIDGE

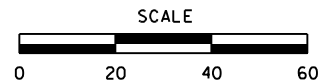
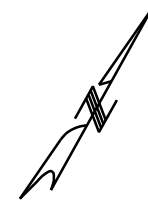
LEGEND

- PR. VAULT
- PR. COMM
- EX. COMM

GENERAL NOTES

- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
- ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
- LATERAL BENDS FOR SPLICE VAULTS LOCATED TO THE WAYSIDE OF THE TRACK SLAB SHALL BE FACTORY-MADE BENDS.
- CONTRACTOR TO COORDINATE FINAL TOP ELEVATION OF ALL CONDUITS, UNLESS OTHERWISE NOTED ON PLAN SHEETS. ALL CONDUITS TO BE SLOPED A MINIMUM OF 1 INCH PER 100 FEET TOWARDS SPLICE VAULTS FOR POSITIVE DRAINAGE.
- FIBER CONNECTIONS TO TRACTION POWER SITES, TRAFFIC SIGNAL CABINETS, TRAIN CONTROL CABINETS, AND STATION COMMUNICATION CABINETS ARE SHOWN IN DISCIPLINE-SPECIFIC DRAWINGS.
- REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISITING KCMO FIBER.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	JLM				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		COMMUNICATIONS PLAN STA 143+50 TO STA 147+50	FILENAME: Z110.dgn
			DRAWN BY	ZJ							CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	AJW							VOLUME: I
			APPROVED BY	NKS							DRAWING NO.: Z110
PLOT DATE: 12/22/2022			4:30:53 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION				



KEYED NOTES

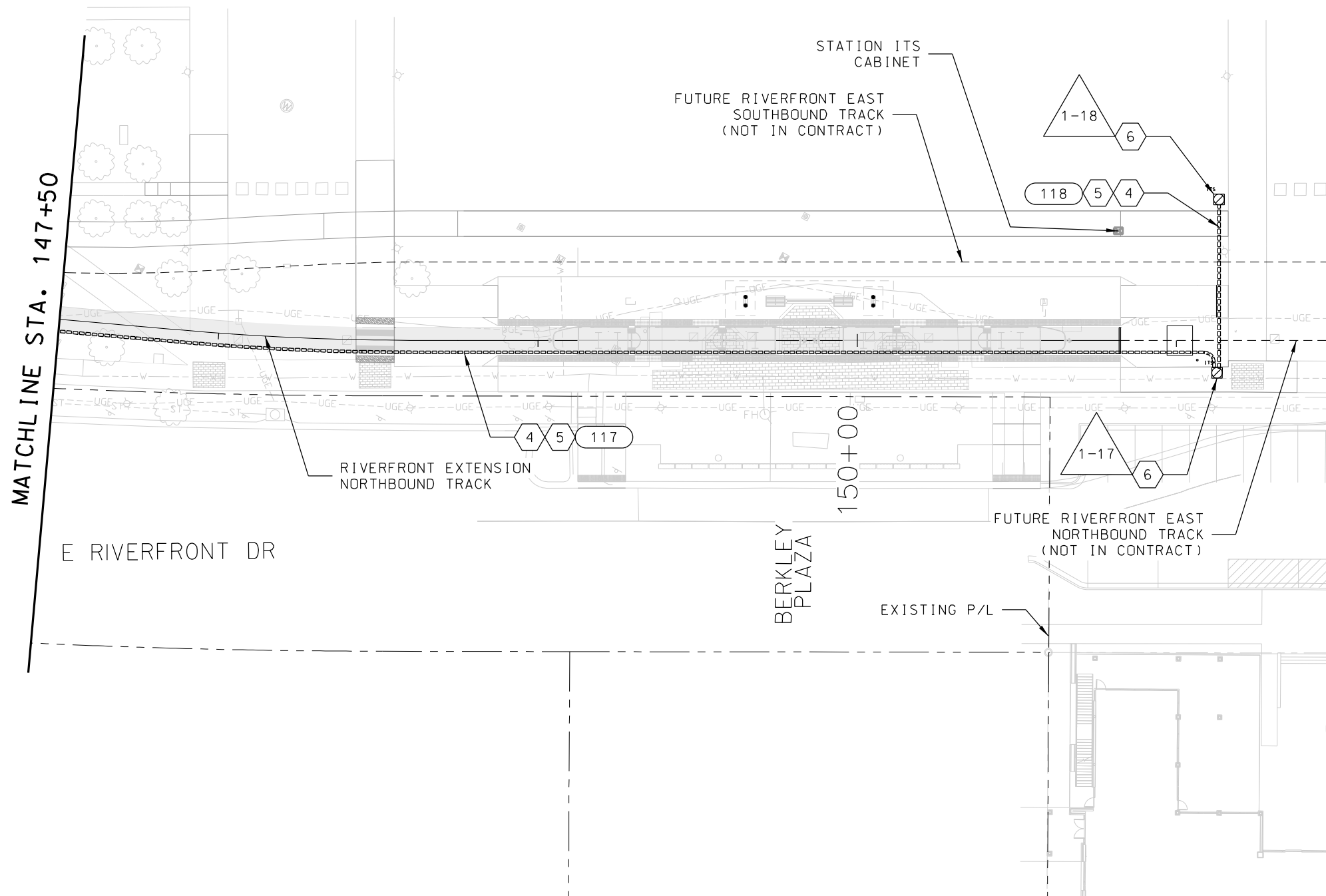
- ① PROTECT-IN-PLACE EX. CONDUIT
- ② PROTECT-IN-PLACE EX. VAULT
- ③ PR. TYPE 5 FIBER OPTIC SPLICE VAULT
- ④ PR. CONDUIT PER SCHEDULE
- ⑤ PR. SMFO CABLE PER SCHEDULE
- ⑥ PR. 30" x 48" FIBER OPTIC SPLICE VAULT
- ⑦ PR. NEMA 4X ENCLOSURE
- xxx PR. CONDUIT ID PER SCHEDULE
- x-x SPLICE VAULT ID PER SCHEDULE
- ① INFRASTRUCTURE IS MOUNTED TO BRIDGE

LEGEND

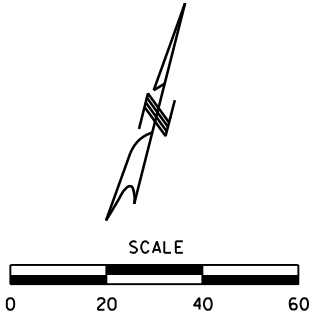
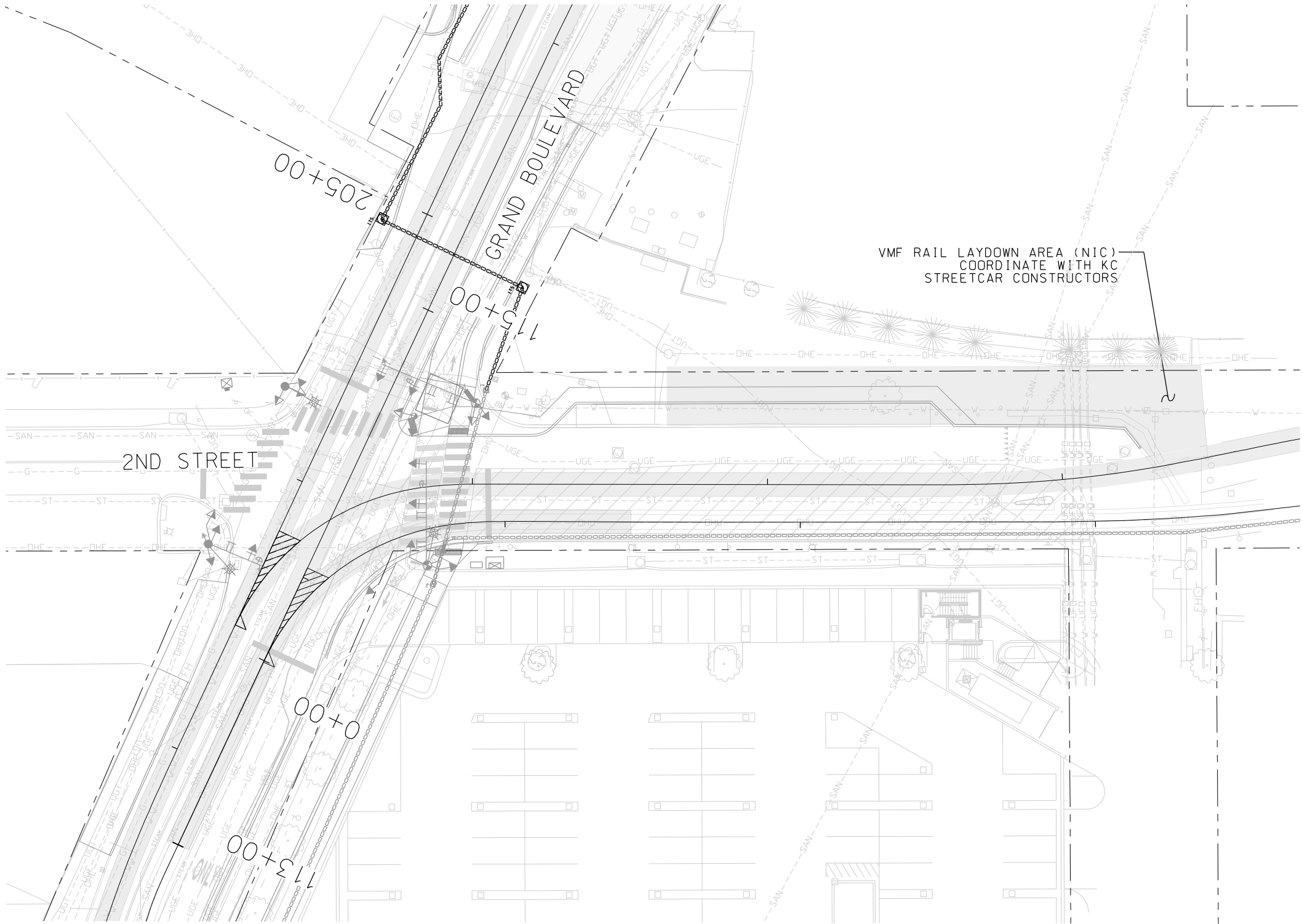
- PR. VAULT
- PR. COMM
- EX. COMM

GENERAL NOTES

- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
- ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
- LATERAL BENDS FOR SPLICE VAULTS LOCATED TO THE WAYSIDE OF THE TRACK SLAB SHALL BE FACTORY-MADE BENDS.
- CONTRACTOR TO COORDINATE FINAL TOP ELEVATION OF ALL CONDUITS, UNLESS OTHERWISE NOTED ON PLAN SHEETS. ALL CONDUITS TO BE SLOPED A MINIMUM OF 1 INCH PER 100 FEET TOWARDS SPLICE VAULTS FOR POSITIVE DRAINAGE.
- FIBER CONNECTIONS TO TRACTION POWER SITES, TRAFFIC SIGNAL CABINETS, TRAIN CONTROL CABINETS, AND STATION COMMUNICATION CABINETS ARE SHOWN IN DISCIPLINE-SPECIFIC DRAWINGS.
- REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISTING KCMO FIBER.



REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS PLAN STA 147+50 TO END	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	JLM							FILENAME:	
			DRAWN BY	ZJ							Z111.dgn	
			CHECKED BY	AJW							CONTRACT NO.:	
			APPROVED BY	NKS							CONTRACT NO. ***	
PLOT DATE: 12/22/2022			4:30:56 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:		Z111	SHEET NO.:
										413		



KEYED NOTES

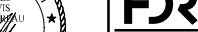
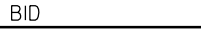
- ① PROTECT-IN-PLACE EX. CONDUIT
- ② PROTECT-IN-PLACE EX. VAULT
- ③ PR. TYPE 5 FIBER OPTIC SPLICE VAULT
- ④ PR. CONDUIT PER SCHEDULE
- ⑤ PR. SMFO CABLE PER SCHEDULE
- ⑥ PR. 30" x 48" FIBER OPTIC SPLICE VAULT
- ⑦ PR. NEMA 4X ENCLOSURE
- xxx PR. CONDUIT ID PER SCHEDULE
- x-x SPLICE VAULT ID PER SCHEDULE
- ① INFRASTRUCTURE IS MOUNTED TO BRIDGE

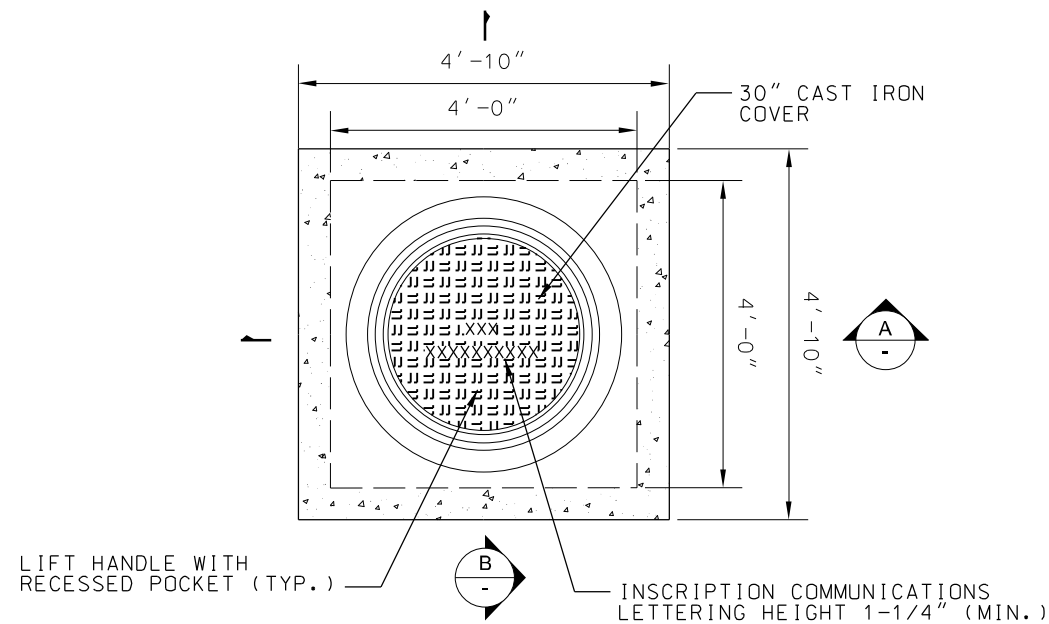
LEGEND

- PR. VAULT
- PR. COMM
- EX. COMM

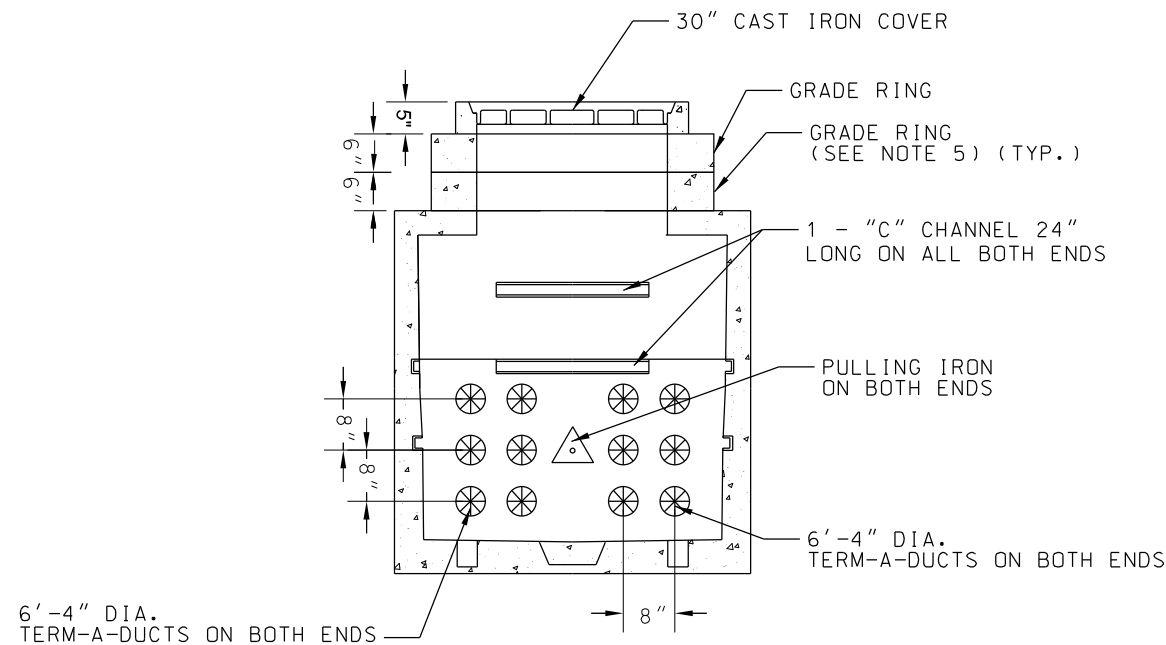
GENERAL NOTES

- SEE DISCIPLINE-SPECIFIC DRAWINGS FOR DETAILED INFORMATION ON CIVIL, TRAFFIC, STRUCTURES, SYSTEMS, AND DRAINAGE.
- ALL STATIONING REFERS TO SOUTHBOUND TRACK CENTERLINE STATIONING UNLESS NOTED OTHERWISE.
- LATERAL BENDS FOR SPLICE VAULTS LOCATED TO THE WAYSIDE OF THE TRACK SLAB SHALL BE FACTORY-MADE BENDS.
- CONTRACTOR TO COORDINATE FINAL TOP ELEVATION OF ALL CONDUITS, UNLESS OTHERWISE NOTED ON PLAN SHEETS. ALL CONDUITS TO BE SLOPED A MINIMUM OF 1 INCH PER 100 FEET TOWARDS SPLICE VAULTS FOR POSITIVE DRAINAGE.
- FIBER CONNECTIONS TO TRACTION POWER SITES, TRAFFIC SIGNAL CABINETS, TRAIN CONTROL CABINETS, AND STATION COMMUNICATION CABINETS ARE SHOWN IN DISCIPLINE-SPECIFIC DRAWINGS.
- REFER TO DEMOLITION PLANS FOR ADDITIONAL DETAIL REGARDING PROTECTION OF EXISITING KCMO FIBER.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS PLAN 2ND STREET TO VMF	SCALE FOR 22"x34": 1" = 20'
			CHECKED BY	JLM				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			FILENAME:
			DRAWN BY	ZJ							Z112.dgn
			CHECKED BY	AJW							CONTRACT NO.:
			APPROVED BY	NKS							CONTRACT NO. ***
PLOT DATE: 12/22/2022			4:31:00 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:	
									Z112	414	



TYPICAL PRECAST MANHOLE TYPE 5 1
NOT TO SCALE

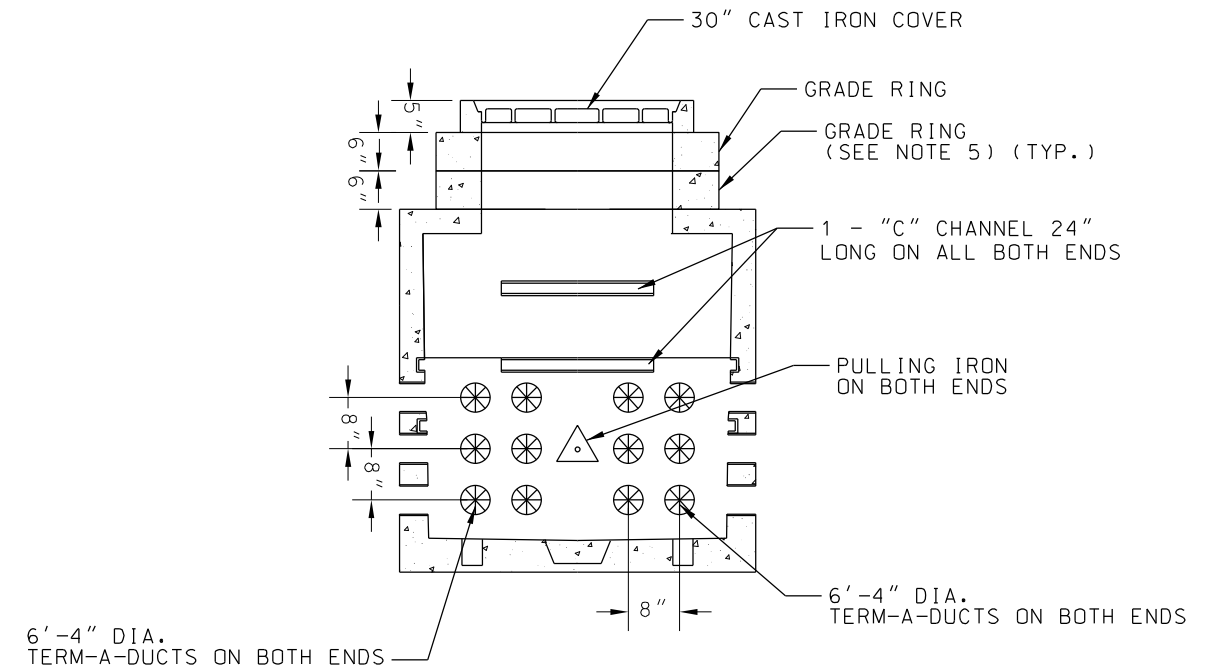


MANHOLE				
MANHOLE TYPE	MIN DEPTH BOX D	MIN. L	MIN. W	AREA USED
5	4'-10" *	4'-10"	4'-10"	COMMUNICATION

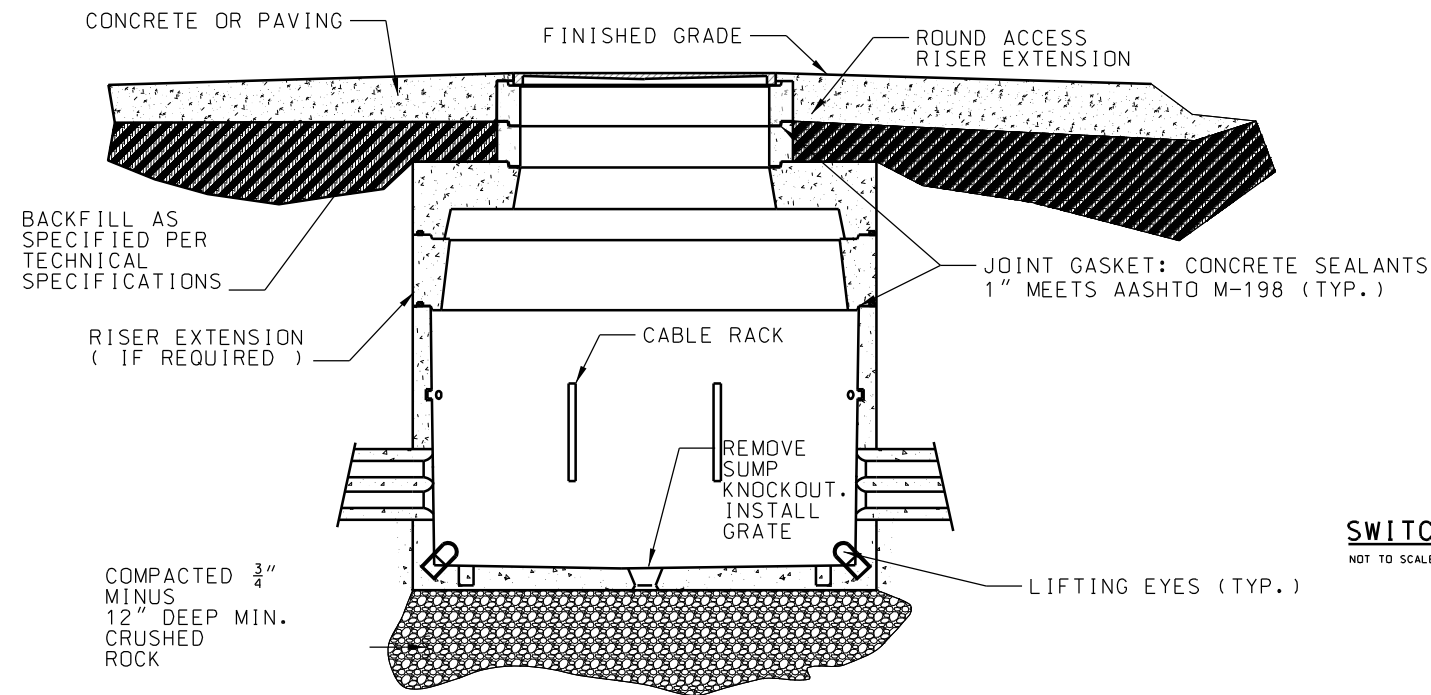
*SEE NOTE 4

NOTES:

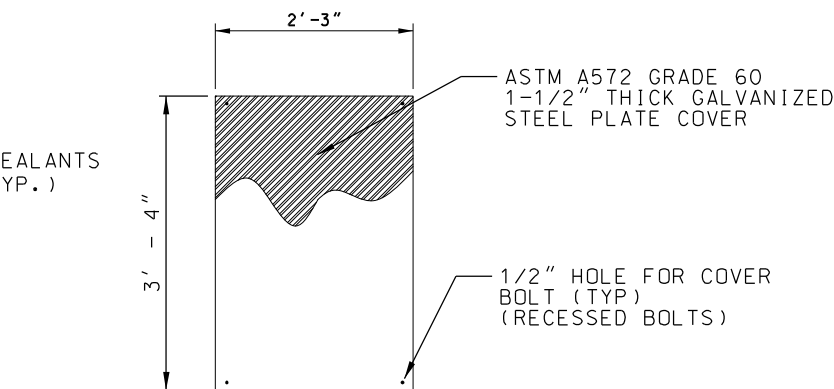
1. USE GRADE RINGS UP TO A MAXIMUM OF 30" DIA. TO ACHIEVE FINAL ELEVATION. EACH MANHOLE SHALL BE PROVIDED WITH AT LEAST ONE (1) 6" H GRADE RING.
2. COVERS AND FRAMES SHALL BE DESIGNED FOR AASHTO HS-20 LOADING.
3. INSTALL EIGHT CABLE RACKS WITH SIXTEEN INSULATOR SUPPORT CHANNELS OR HOOKS PER MANHOLE.
4. MINIMUM DEPTH OF MANHOLE DOES NOT INCLUDE GRADE RINGS.
5. CONTRACTOR SHALL USE GRADE RINGS TO EXTEND MANHOLE OPENING UP TO FINISHED GRADE AND FLUSH WITH TOP OF TRACK SLAB.
6. SEE SHEET XXXX AND XXXX FOR DETAILS ON MANHOLES ADJACENT TO TRACK SLAB OR BETWEEN RAILS.



REV	DATE	DESCRIPTION	DESIGNED BY	AJW	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	JLM	HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			FILENAME:
			DRAWN BY	ZJ				Z601
			CHECKED BY	AJW				CONTRACT NO.:
			APPROVED BY	NKS				CONTRACT NO. ***
PLOT DATE: 12/22/2022			4:34:03 PM		NOT FOR CONSTRUCTION			VOLUME:
			DATE					DRAWING NO.:
			12-23-2022					SHEET NO.:
								Z601 415

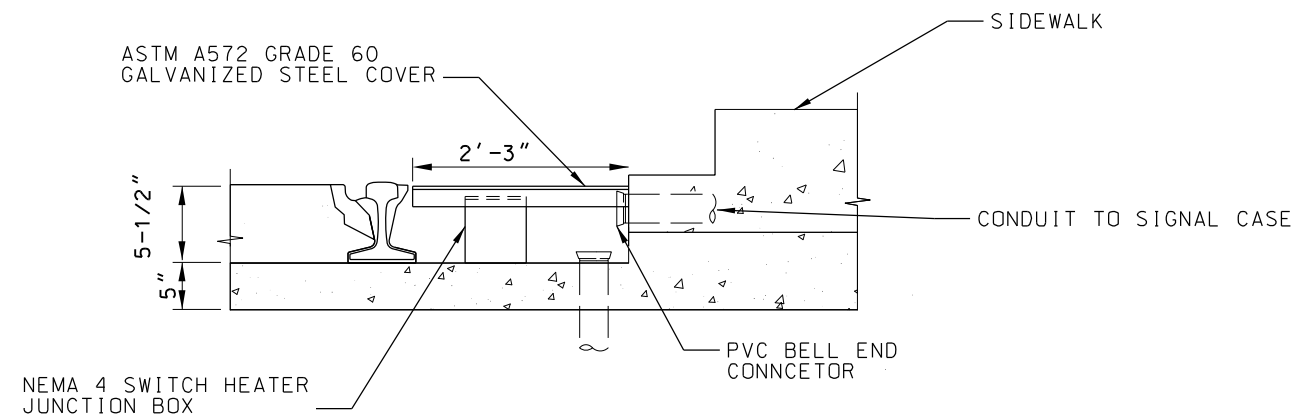


TYPE 5 COMMUNICATION FIBER SPLICE VAULT INSTALLATION DETAIL ①
NOT TO SCALE

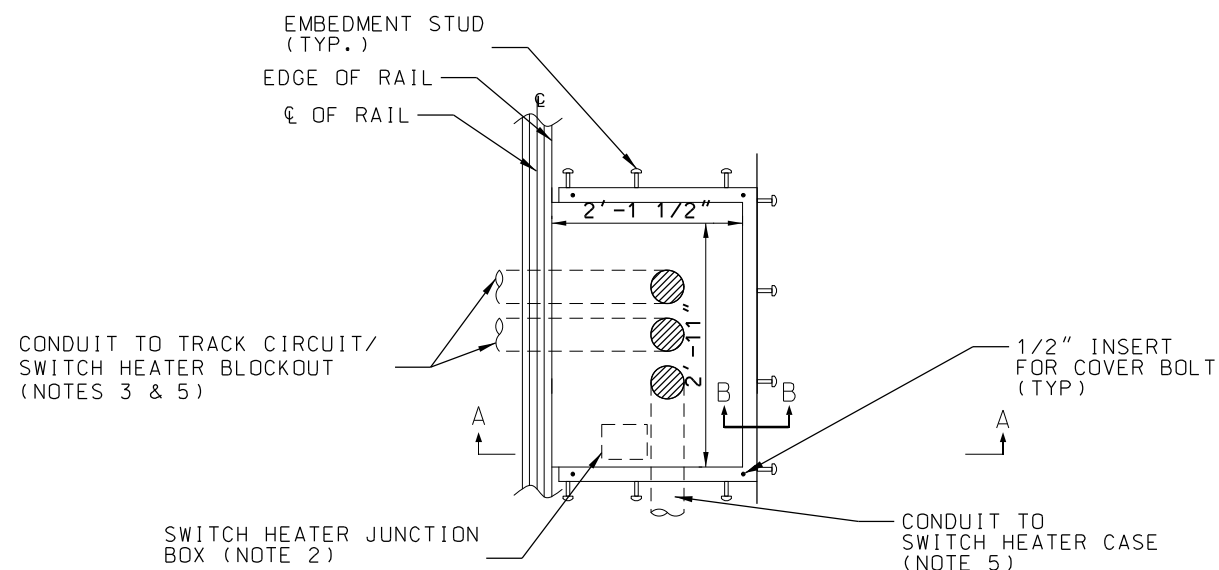


SWITCH HEATER / TRACK CIRCUIT BLOCKOUT COVER
NOT TO SCALE

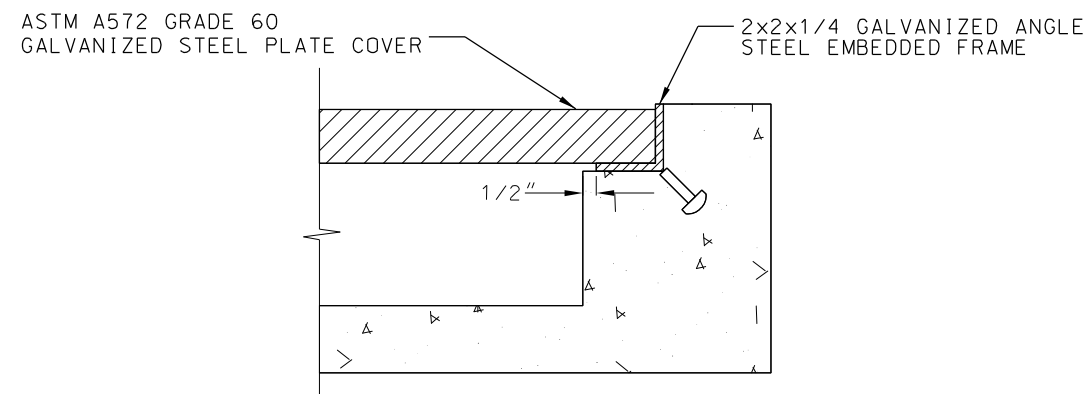
- NOTES:**
1. 2"x 2"x1/4" ANGLE STEEL FRAME SHALL BE EMBEDDED IN THE CONCRETE ALLOWING THE GALVANIZED STEEL COVER TO BE FLUSH WITH FINISHED GRADE.
 2. DEPTH OF BLOCKOUT SHALL BE SUFFICIENT FOR TOP OF SWITCH HEATER JUNCTION BOX TO HAVE MINIMUM 1 INCH CLEARANCE.
 3. CONTRACTOR SHALL CONNECT THE 2-4" NIPPLES IN EACH BLOCKOUT WITH 4" GRSC CONDUIT AND SUPPORT AS REQUIRED BY THE NEC.
 4. SEE TRACK PLANS FOR TRACK SLAB CIVIL ELEMENT.
 5. CONTRACTOR SHALL SEAL RACEWAYS WITH WATER PROOF SEALANT AFTER CABLE IS INSTALLED. CONDUIT SEALS SHALL PROTECT CONDUIT FROM BEING FILLED WITH RE-ENTERABLE RESIN.
 6. AFTER SYSTEMS ACCEPTANCE TESTING, BLOCKOUTS TO BE FILLED WITH 3M SCOTCHCAST RE-ENTERABLE ELECTRICAL INSULATED RESIN 2123 OR APPROVED EQUAL.



SECTION A-A
NOT TO SCALE

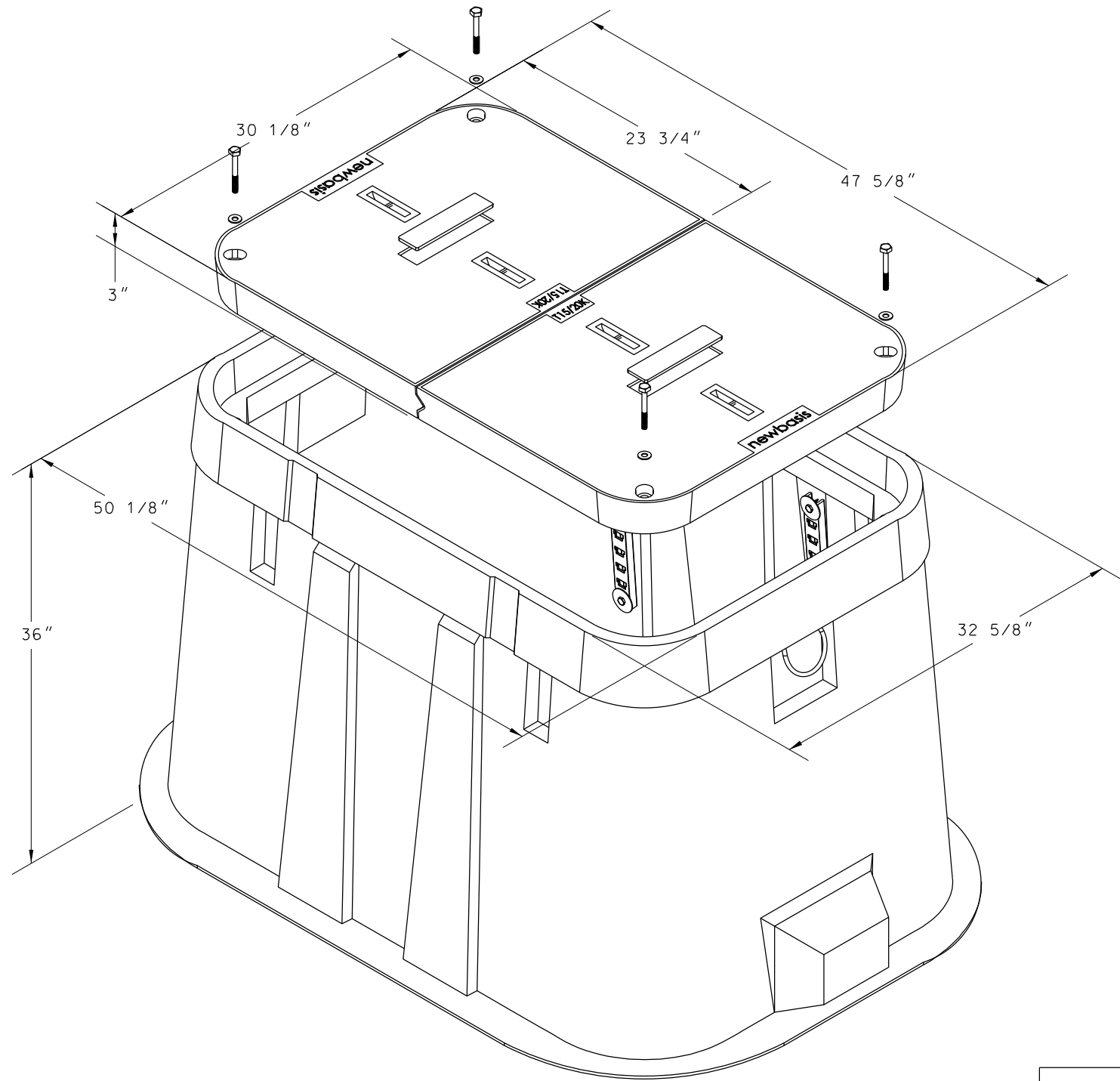


SWITCH HEATER/TRACK CIRCUIT BLOCKOUT DETAIL ②
NOT TO SCALE



SECTION B-B
NOT TO SCALE
(TYPICAL ALL THREE SIDES)

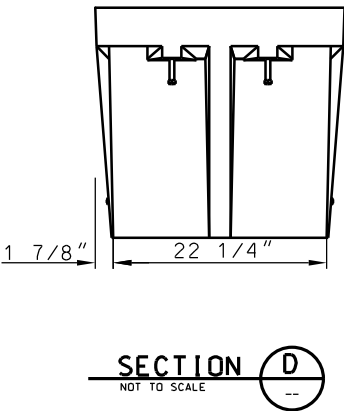
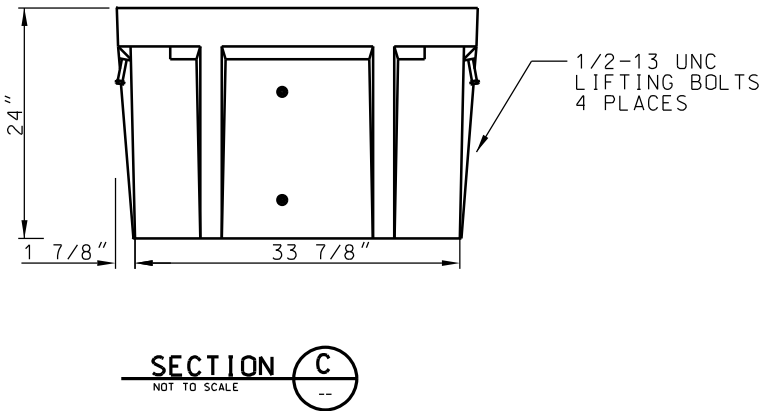
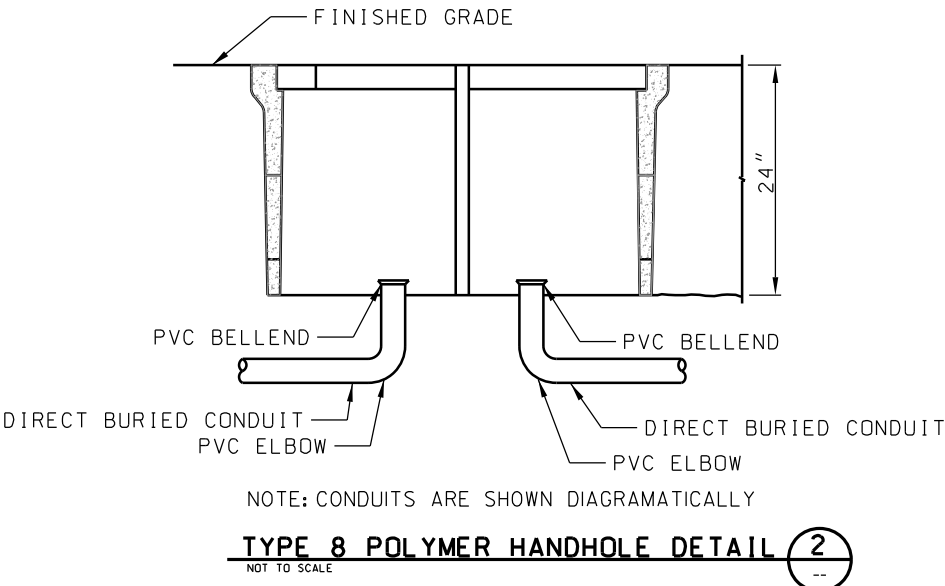
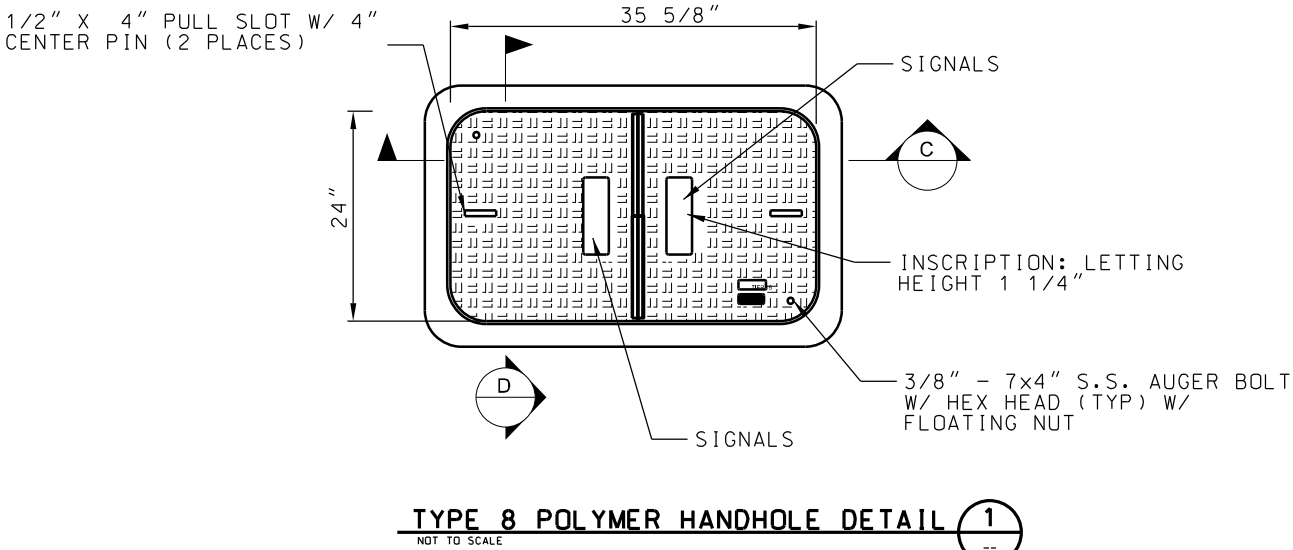
REV	DATE	DESCRIPTION	DESIGNED BY	AJW		 12-23-2022 JAMES MERSEREAU - ENGINEER LICENSE NO. 2021043237	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION SYSTEMWIDE ELECTRICAL MANHOLE INSTALLATION AND SWITCH HEATER/TRACK CIRCUIT BLOCKOUT DETAILS	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Z602 CONTRACT NO.: CONTRACT NO. *** VOLUME: 1	
			CHECKED BY	JLM			 HDR Engineering, Inc.	NOT FOR CONSTRUCTION		DRAWING NO.: Z602	SHEET NO.: 416
			DRAWN BY	ZJ			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				
			CHECKED BY	AJW							
			APPROVED BY	NKS							
PLOT DATE: 12/22/2022			4:31:06 PM		DATE		12-23-2022				



INSIDE DIMENSIONS		
LENGTH	WIDTH	DEPTH
45 5/8"	28"	33"
54 1/8"	36 5/8"	

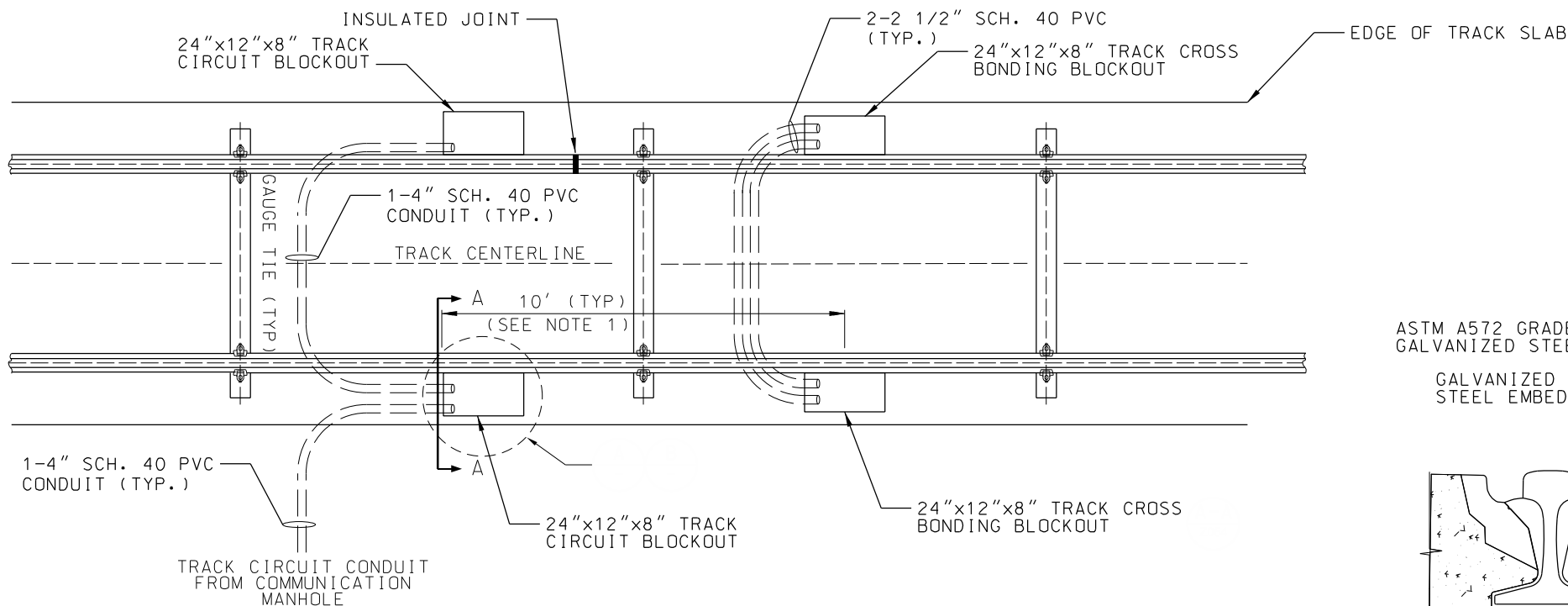
- NOTES:
1. SEE TECHNICAL SPECIFICATION FOR DETAIL SPLICE VAULT REQUIREMENTS.
 2. ADJUST CONDUIT ENTRY INTO THE SPLICE VAULT. ADJUST DEPTH OF SPLICE VAULT TO ASSURE THAT COVER IS FLUSH WITH FINISH GRADE.
 3. SEE COMMUNICATION DUCTBANK PLANS FOR FINAL LOCATION OF SPLICE VAULTS.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SYSTEMWIDE ELECTRICAL FIBER OPTIC SPLICE VAULT	SCALE FOR 22"x34":	
			CHECKED BY	JLM							NOT TO SCALE	
			DRAWN BY	ZJ							FILENAME:	
			CHECKED BY	AJW							Z603	
			APPROVED BY	NKS							CONTRACT NO.:	
PLOT DATE: 12/22/2022			4:34:09 PM		CONTRACT NO. ***							
			DATE		12-23-2022		NOT FOR CONSTRUCTION		VOLUME:			
					JAMES MERSEREAU - ENGINEER LICENSE NO. 2021043237				DRAWING NO.:			
									Z603			
									SHEET NO.:			
									417			

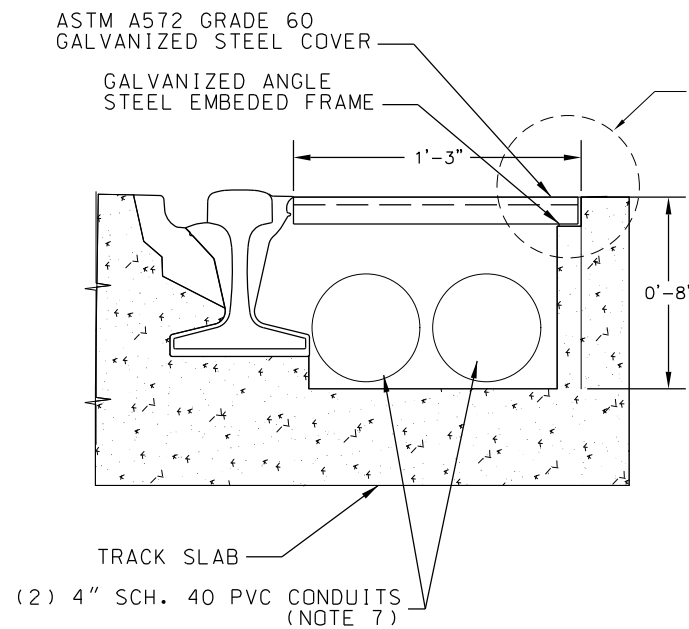


- NOTES:
1. SEE TRAIN CONTROL EQUIPMENT LOCATION PLANS FOR LOCATION OF HANDHOLES AND SPLICE VAULTS.
 2. SEE PLAN VIEW DRAWINGS AND SCHEDULE FOR STATIONING LOCATIONS.
 3. CONTRACTOR SHALL SEAL RACEWAYS WITH WATER PROOF SEALANT AFTER CABLE IS INSTALLED.
 4. CONTRACTOR SHALL INSTALL DRAIN IN ALL BLOCKOUTS.
 5. CONDUITS SHALL EXTEND INTO THE HANDHOLE A MAXIMUM OF 1" FROM THE INSIDE WALL AND TERMINATE WITH BELL END FITTINGS.
 6. ADJUST CONDUIT ENTRY INTO THE HANDHOLE TO CREATE POSITIVE CONDUIT DRAINAGE AND TO ENTER CENTER OF HANDHOLE.
 7. ADJUST DEPTH OF HANDHOLE FOR FINISHED GRADE TO BE FLUSH WITH COVER.

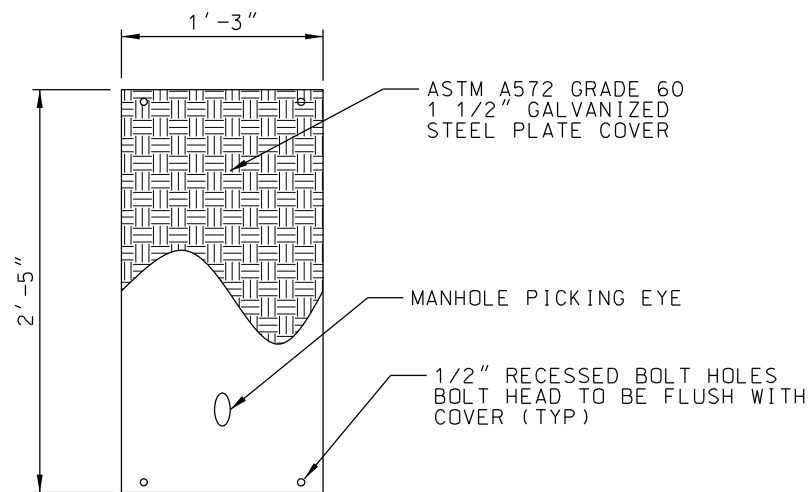
REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SYSTEMWIDE ELECTRICAL HANDHOLE DETAILS	SCALE FOR 22"x34": NOT TO SCALE				
			CHECKED BY	JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION							
			DRAWN BY	ZJ											
			CHECKED BY	AJW											
			APPROVED BY	NKS											
PLOT DATE: 12/22/2022			4:31:12 PM		DATE	12-23-2022									



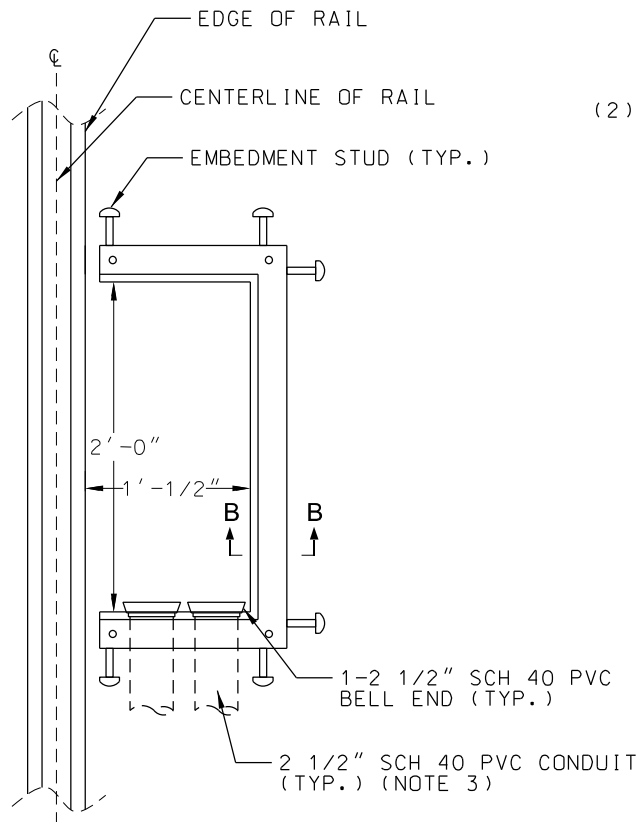
TRACK BLOCKOUT DETAIL 1
NOT TO SCALE



SECTION A-A
NOT TO SCALE



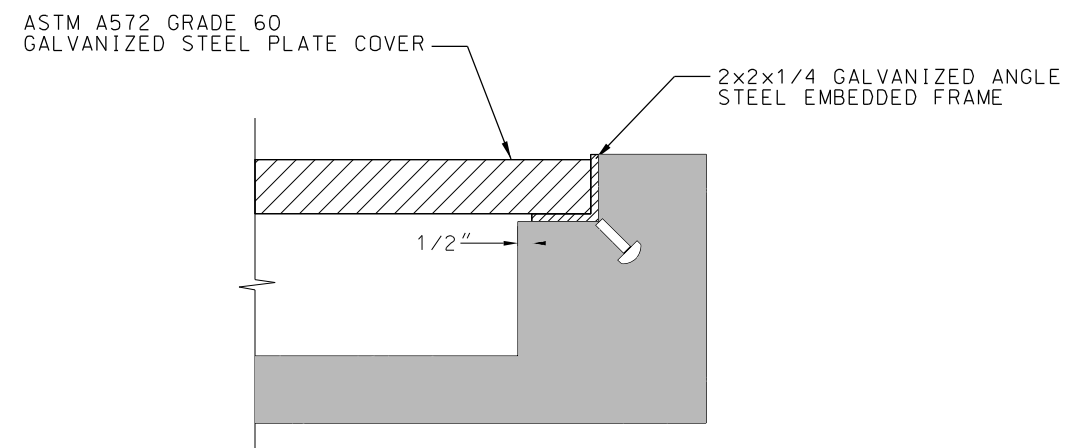
TRACK CIRCUIT BLOCKOUT COVER A
NOT TO SCALE



TRACK CIRCUIT BLOCKOUT DETAIL TYPICAL B
NOT TO SCALE

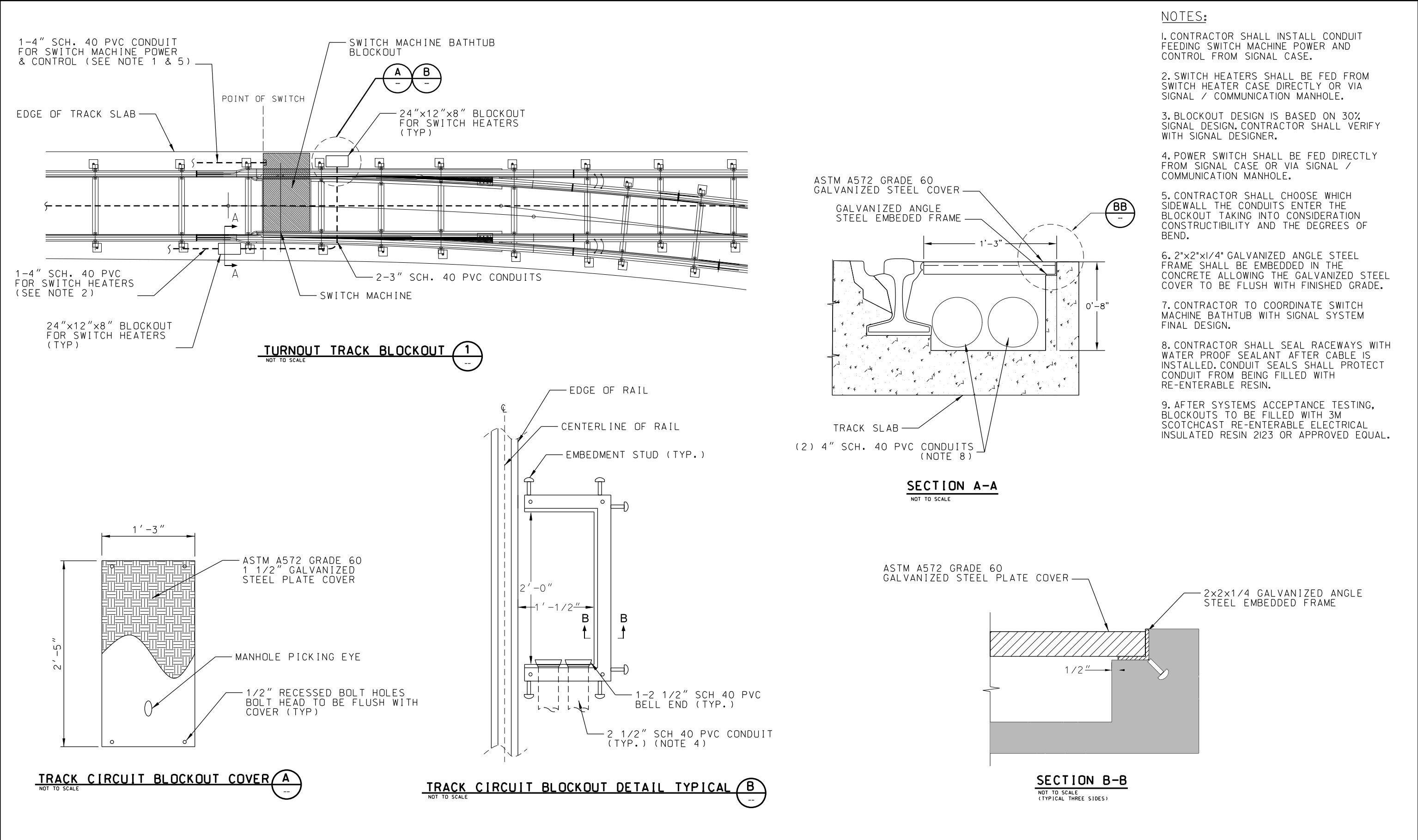
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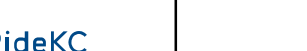
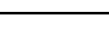
- CROSSBOND BLOCKOUTS AND TRACK CIRCUIT BLOCKOUTS SHALL BE OFFSET AT LEAST 10' AWAY FROM EACH OTHER.
- CAD WELD TRACK CIRCUIT CABLES TO NEUTRAL AXIS ON WEB OF RAIL PER CONTRACTOR'S FINAL DESIGN.
- CONTRACTOR SHALL CHOOSE WHICH SIDEWALL THE NEGATIVE RETURN CONDUITS ENTER THE BLOCKOUT TAKING INTO CONSIDERATION CONSTRUCTIBILITY AND THE DEGREES OF BEND.
- 2"x2"x1/4" ANGLE STEEL FRAME SHALL BE EMBEDDED IN THE CONCRETE ALLOWING THE GALVANIZED STEEL COVER TO BE FLUSH WITH FINISHED GRADE.
- BLOCKOUT DESIGN IS BASED ON 30% SIGNAL DESIGN. CONTRACTOR SHALL VERIFY WITH SIGNAL DESIGNER.
- CONTRACTOR TO SEAL ALL CONDUITS ENTERING AND EXITING BLOCKOUT.
- CONTRACTOR SHALL SEAL RACEWAYS WITH WATER PROOF SEALANT AFTER CABLE IS INSTALLED. CONDUIT SEALS SHALL PROTECT CONDUIT FROM BEING FILLED WITH RE-ENTERABLE RESIN.
- AFTER SYSTEMS ACCEPTANCE TESTING, BLOCKOUTS TO BE FILLED WITH 3M SCOTCHCAST RE-ENTERABLE ELECTRICAL INSULATED RESIN 2123 OR APPROVED EQUAL.



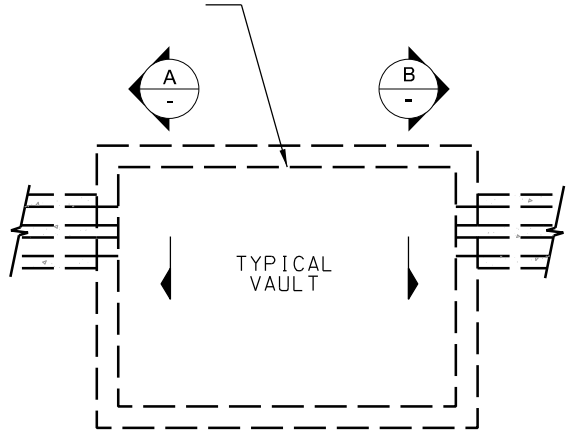
SECTION B-B
NOT TO SCALE
(TYPICAL THREE SIDES)

REV	DATE	DESCRIPTION	DESIGNED BY	AJW	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	JLM	HDR	HDR Engineering, Inc.	SYSTEMWIDE ELECTRICAL	FILENAME: Z606
			DRAWN BY	ZJ	10450 Holmes Road		TYPICAL TRACK CIRCUIT BLOCKOUT DETAIL	CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	AJW	Suite 600			VOLUME:
			APPROVED BY	NKS	Kansas City, MO 64131-3471			DRAWING NO.: SHEET NO.:
					816-360-2700			Z606 419
					Certificate of Authority: 000856			
PLOT DATE: 12/22/2022			DATE 12-23-2022		NOT FOR CONSTRUCTION			



REV	DATE	DESCRIPTION	DESIGNED BY	AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SYSTEMWIDE ELECTRICAL TRACK TURNOUT BLOCKOUT DETAIL	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION			FILENAME:	
			DRAWN BY	ZJ						Z607	
			CHECKED BY	AJW						CONTRACT NO.:	
			APPROVED BY	NKS						CONTRACT NO. ***	
PLOT DATE: 12/22/2022			DATE 12-23-2022				VOLUME:				
							DRAWING NO.:	SHEET NO.:			
							Z607	420			

MANHOLE NO. LABEL - 3" HIGH BLACK
STENCILED LETTERS 9" BELOW TOP ON
BOTH SIDES VAULT



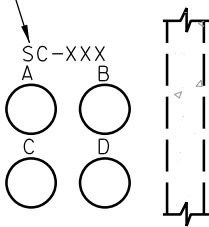
MANHOLE & CONDUIT LABELING - TOP VIEW

1
--

NOT TO SCALE

(NOTE 2)

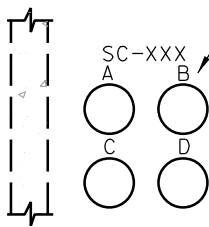
CONDUIT NUMBER 2" HIGH
BLACK STENCILED LETTERS
ABOVE EACH CONDUIT (TYP.)



SECTION A
NOT TO SCALE

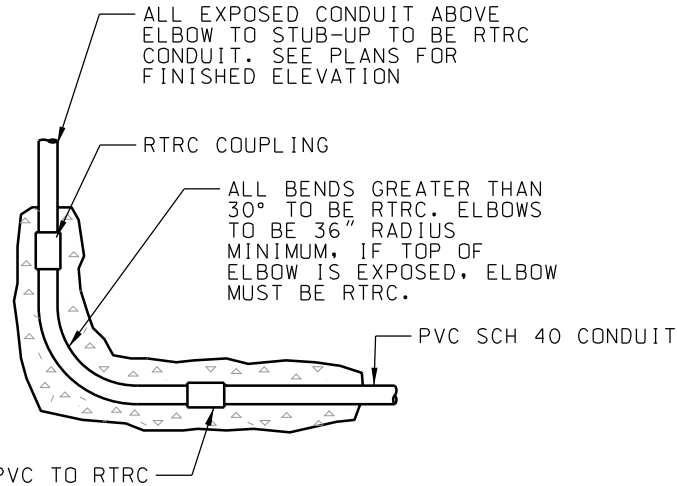
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LETTERING MUST
CORRESPOND WITH
LETTERING AT MANHOLE
WHERE CONDUIT TERMINATES



SECTION B
NOT TO SCALE

--



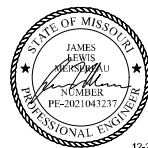
TYPICAL CONDUIT STUB-UP DETAIL

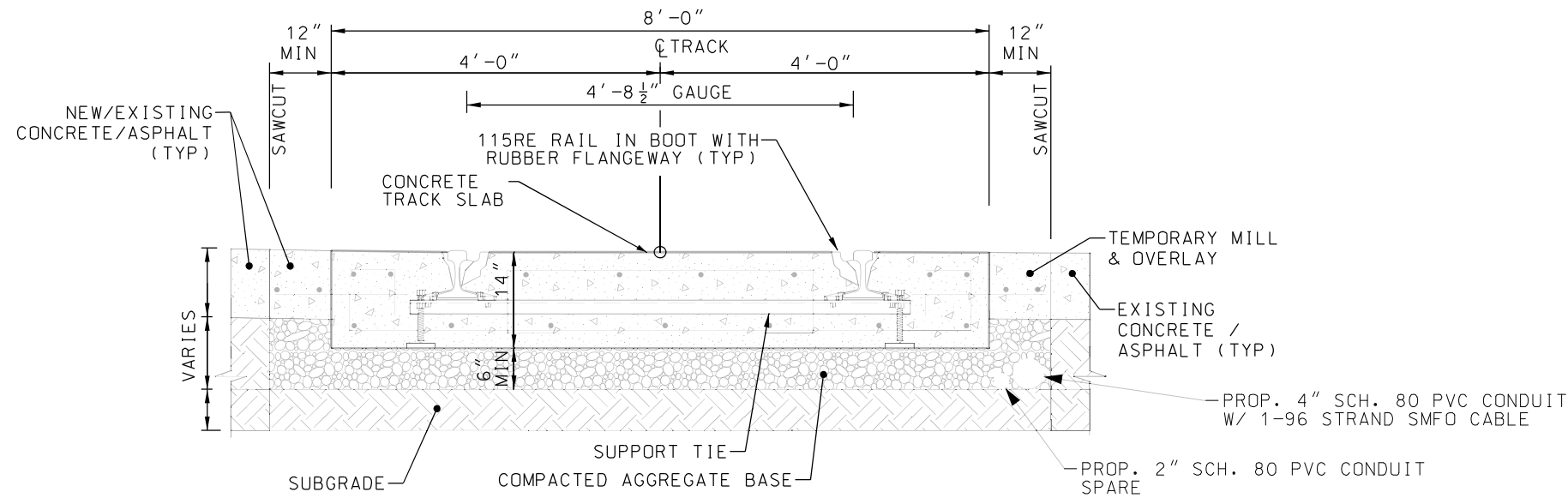
2
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NOT TO SCALE

NOTES:

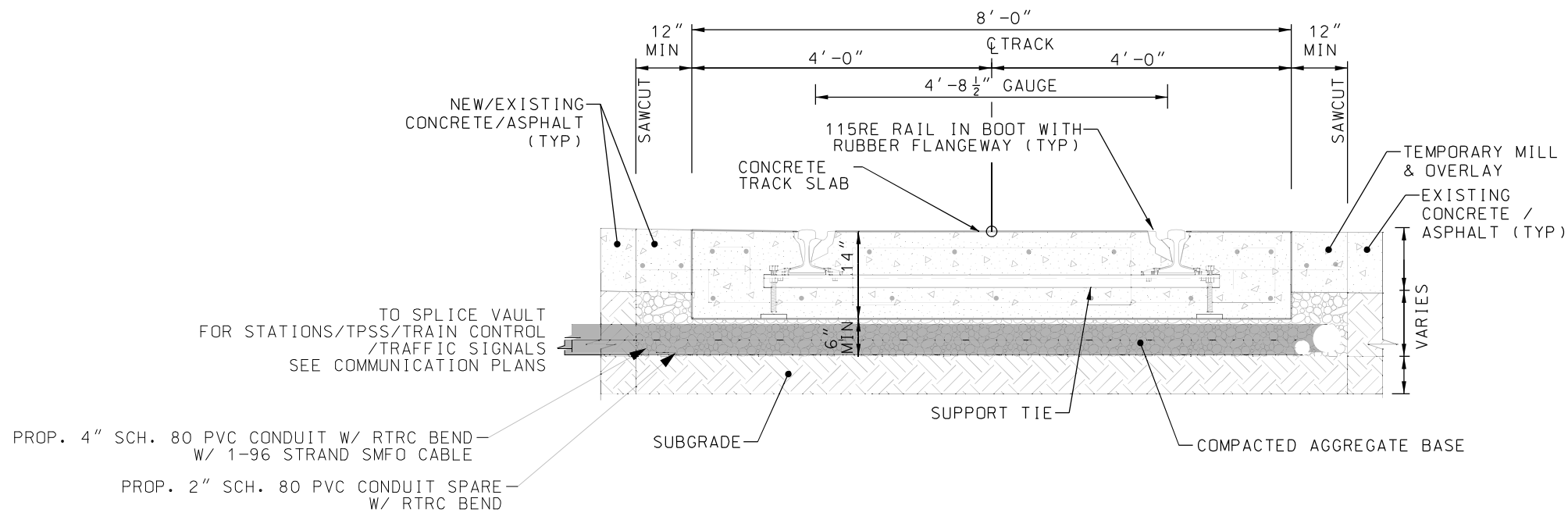
1. USE PVC ELECTRICAL CONDUIT SPACERS TO MAINTAIN A SPACING OF 3" CLEAR BETWEEN TRACTION ELECTRIFICATION AND 1 1/2" CLEAR BETWEEN SIGNAL CONDUITS.
2. LABELING AS SHOWN IN DETAIL 1 WILL BE TYPICAL FOR ALL MANHOLES.
3. MINIMUM DIMENSIONS FOR CLEARANCE TO EXISTING UTILITY PER UTILITY REQUIREMENTS.
4. CALL NATIONAL ONE-CALL NOTIFICATION PRIOR TO EXCAVATION.
5. HAND EXCAVATE NEAR ALL KNOWN OR SUSPECTED UTILITIES.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION							FILENAME:	
			DRAWN BY	ZJ									CONTRACT NO.:			
			CHECKED BY	AJW									CONTRACT NO. ***			
			APPROVED BY	NKS									VOLUME:			
PLOT DATE: 12/22/2022			4:34:20 PM		DATE	12-23-2022									DRAWING NO.:	
					JAMES MERSEREAU - ENGINEER LICENSE NO. 2021043237						Z608		421			

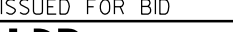


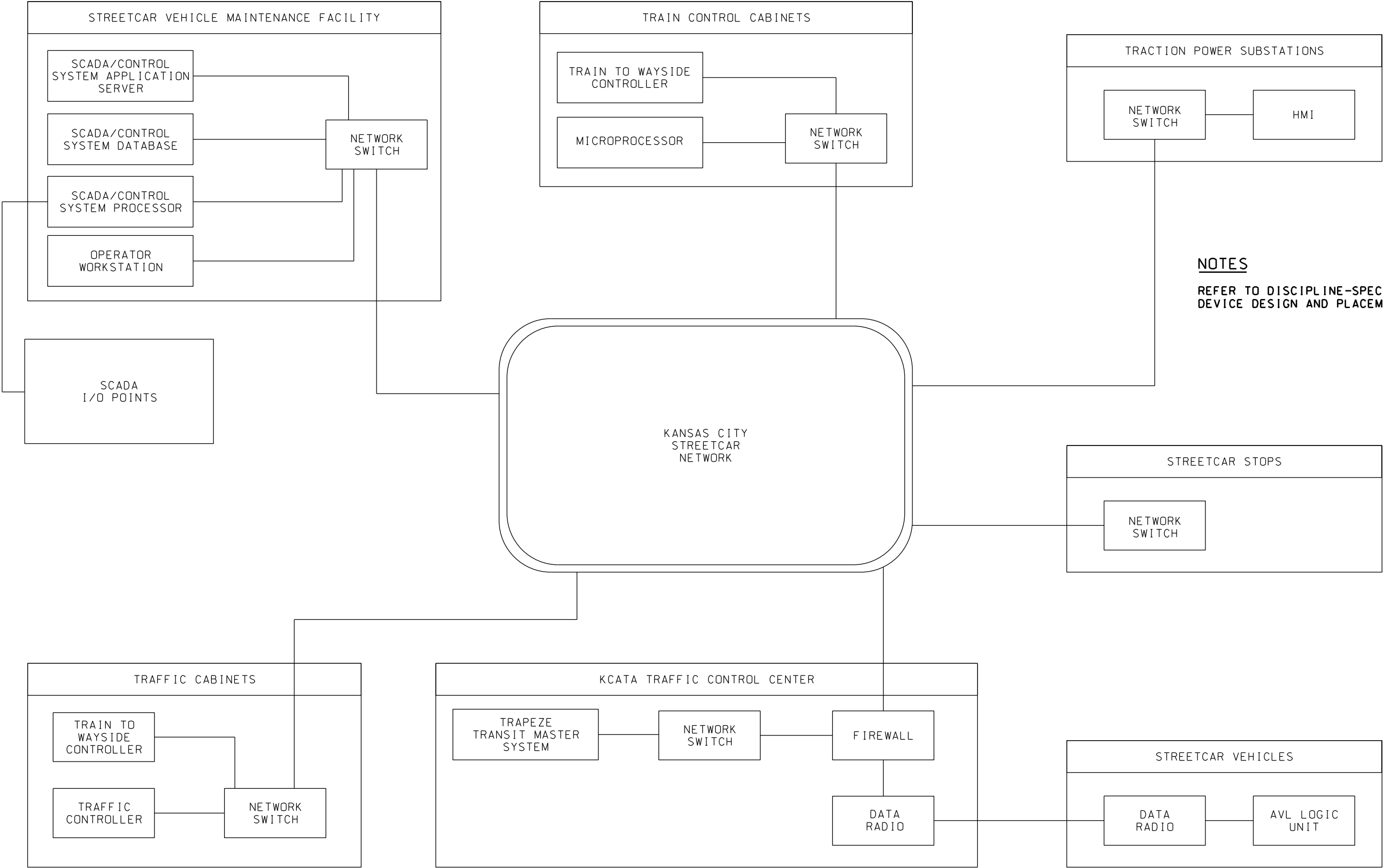
LONGITUDINAL COMMUNICATION CONDUITS TRACK SLAB DETAIL (A)

- NOTES:
1. SEE TRACK DRAWING K901 FOR ADDITIONAL TRACK SLAB DETAILS. DRAWING IS INTENDED TO DEPICT COMMUNICATIONS CONDUIT INSTALLATION AND NOT FOR TRACK CONSTRUCTION.
 2. SEE CIVIL DRAWINGS C101-C124 FOR PAVEMENT TYPE AND DETAILS.
 3. DIMENSIONS VARY WITH TRACK SLAB CONFIGURATION.
 4. CONDUITS WILL BE INSTALLED ADJACENT TO THE TRACK SLAB ON THE OUTBOUND SIDE.
 5. CONDUITS WILL BE INSTALLED AT THE TOP OF SUBGRADE.
 6. ALL LATERAL CONDUIT SWEEPS/ BENDS BENEATH THE TRACK SLAB WILL BE RTRC FACTORY/ SHOP BENDS. FIELD BENDING IS NOT ACCEPTABLE.
 7. ALL LATERAL CONDUITS BENEATH THE TRACK SLAB SHALL BE BETWEEN THE SUPPORT TIES.



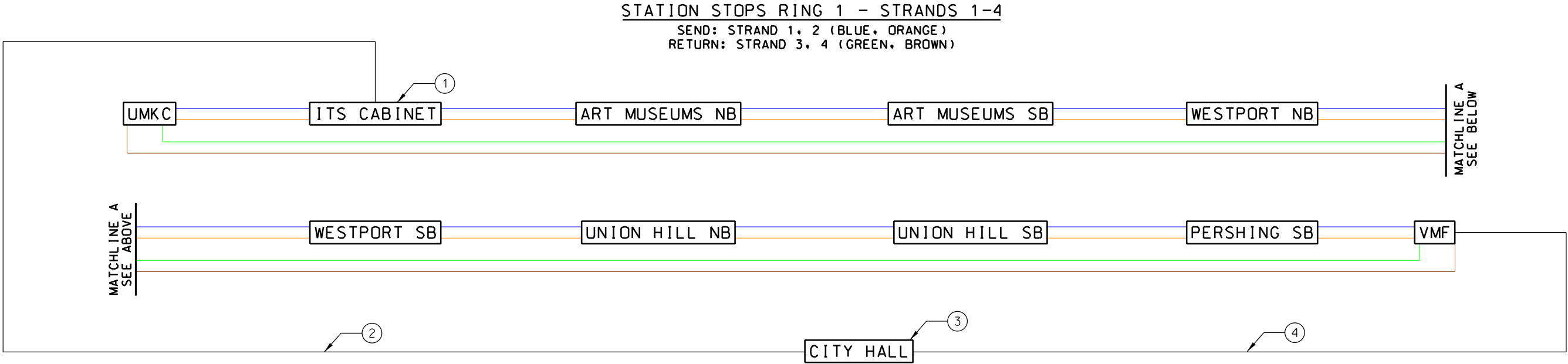
LATERAL COMMUNICATION CONDUITS TRACK SLAB DETAIL (B)

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SYSTEMWIDE ELECTRICAL COMMUNICATION CONDUIT TYPICAL SECTIONS	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	JLM				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			FILENAME: Z609
			DRAWN BY	ZJ							CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY	AJW							VOLUME: 1
			APPROVED BY	NKS							DRAWING NO.: Z609
PLOT DATE: 12/22/2022		4:34:23 PM	DATE	12-23-2022	JAMES MERSEREAU - ENGINEER LICENSE NO. 2021043237		NOT FOR CONSTRUCTION				



NOTES
REFER TO DISCIPLINE-SPECIFIC SHEETS FOR EDGE
DEVICE DESIGN AND PLACEMENT.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLM			COMMUNICATIONS DETAILS NETWORK DIAGRAM	NOT FOR CONSTRUCTION		FILENAME:	Z614
			DRAWN BY	ZJ						CONTRACT NO.:	CONTRACT NO. ***
			CHECKED BY	AJW						VOLUME:	1
			APPROVED BY	NKS						DRAWING NO.:	Z614
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PLOT DATE: 12/22/2022			4:31:26 PM								



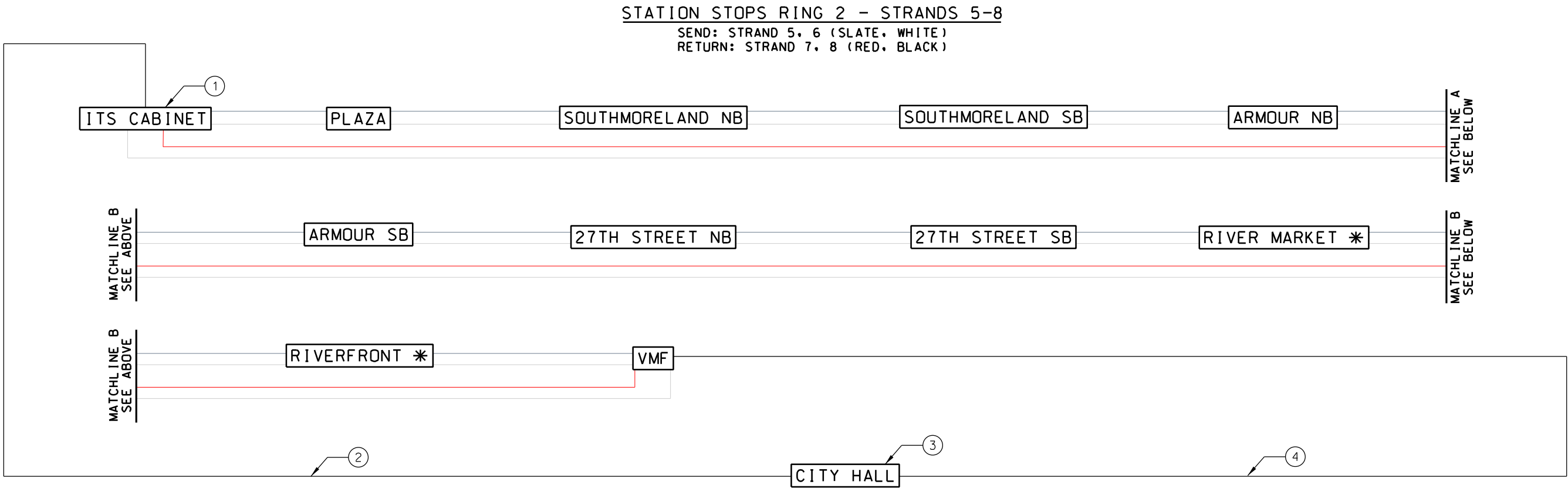
GENERAL NOTES

- 1. ALL STRANDS SHOWN THIS SHEET RESIDE WITHIN THE BLUE BUFFER TUBE (STRANDS 1-12).
- 2. RINGS SHALL BE CONFIGURED AND GENERATED FROM VEHICLE MAINTENANCE FACILITY.
- 3. RINGS TO BE CONFIGURED AS RESILIENT ETHERNET PROTOCOL (REP) RINGS.
- 4. SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.
- 5. SHEET INCLUDED FOR REFERENCE. ALL WORK THIS SHEET IS PART OF THE MAIN STREET EXTENSION PROJECT.

KEYED NOTES

- 1. PR. LAYER 3 SWITCH IN ITS CABINET AT DR. MARTIN LUTHER KING JR. BLVD
- 2. STRANDS PER KCMO VIA DR. MARTIN LUTHER KING JR. BLVD AND TROOST AVE. ADDITIONAL SPLICING MAY BE REQUIRED AT THE DIRECTION OF CHRIS LOCKEY / KCMO.
- 3. 2-PR. LAYER 3 SWITCHES AT CITY HALL TO PATCH TO CONNECT TO EX. MULTIMODE FIBER CONNECTION TO THE VMF. PATCH AT THE DIRECTION OF CHRIS LOCKEY / KCMO. ALL KC STREETCAR COMMUNICATIONS (STATIONS, TPSS) SHALL BE ROUTED TO THE VMF.
- 4. EX. MULTIMODE FIBER CONNECTION

REV	DATE	DESCRIPTION	DESIGNED BY AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Z615 CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: Z615 424		
			CHECKED BY JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856					
			DRAWN BY ZJ								
			CHECKED BY AJW								
			APPROVED BY NKS								
PLOT DATE: 12/22/2022			DATE 12-23-2022	NOT FOR CONSTRUCTION			COMMUNICATIONS DETAILS RING DIAGRAM SHEET 1				



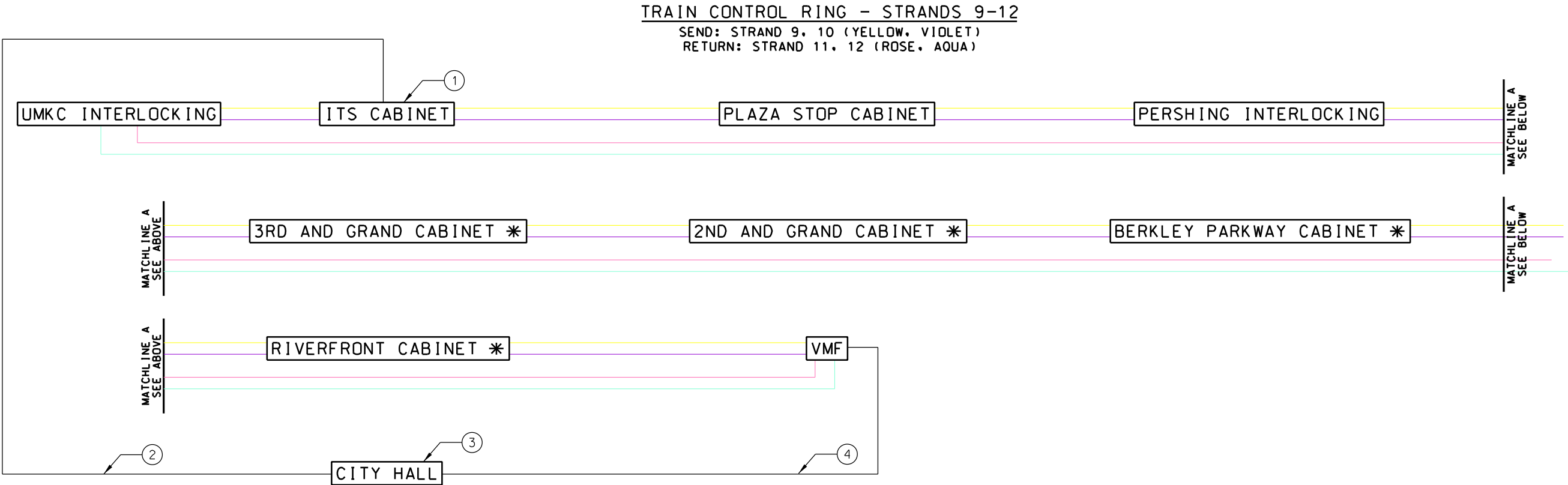
GENERAL NOTES

- 1. ALL STRANDS SHOWN THIS SHEET RESIDE WITHIN THE BLUE BUFFER TUBE (STRANDS 1-12).
- 2. RINGS SHALL BE CONFIGURED AND GENERATED FROM VEHICLE MAINTENANCE FACILITY.
- 3. RINGS TO BE CONFIGURED AS RESILIENT ETHERNET PROTOCOL (REP) RINGS.
- 4. SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.
- 5. SHEET IS INCLUDED FOR REFERENCE. WORK THIS PROJECT IS LIMITED TO CONNECTIONS FOR STATIONS INDICATED WITH THE * SYMBOL. ALL OTHER WORK BY THE MAIN STREET EXTENSION PROJECT.

KEYED NOTES

- 1. PR. LAYER 3 SWITCH IN ITS CABINET AT DR. MARTIN LUTHER KING JR. BLVD
- 2. STRANDS PER KCMO VIA DR. MARTIN LUTHER KING JR. BLVD AND TROOST AVE. ADDITIONAL SPLICING MAY BE REQUIRED AT THE DIRECTION OF CHRIS LOCKEY / KCMO.
- 3. 2-PR. LAYER 3 SWITCHES AT CITY HALL TO PATCH TO CONNECT TO EX. MULTIMODE FIBER CONNECTION TO THE VMF. PATCH AT THE DIRECTION OF CHRIS LOCKEY / KCMO. ALL KC STREETCAR COMMUNICATIONS (STATIONS, TPSS) SHALL BE ROUTED TO THE VMF.
- 4. EX. MULTIMODE FIBER CONNECTION

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE		
			CHECKED BY	JLM				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		COMMUNICATIONS DETAILS RING DIAGRAM SHEET 2	FILENAME:	CONTRACT NO.: CONTRACT NO. *** VOLUME: 1
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			CHECKED BY	AJW								
			APPROVED BY	NKS								
PLOT DATE: 12/22/2022			DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:	Z616	425		



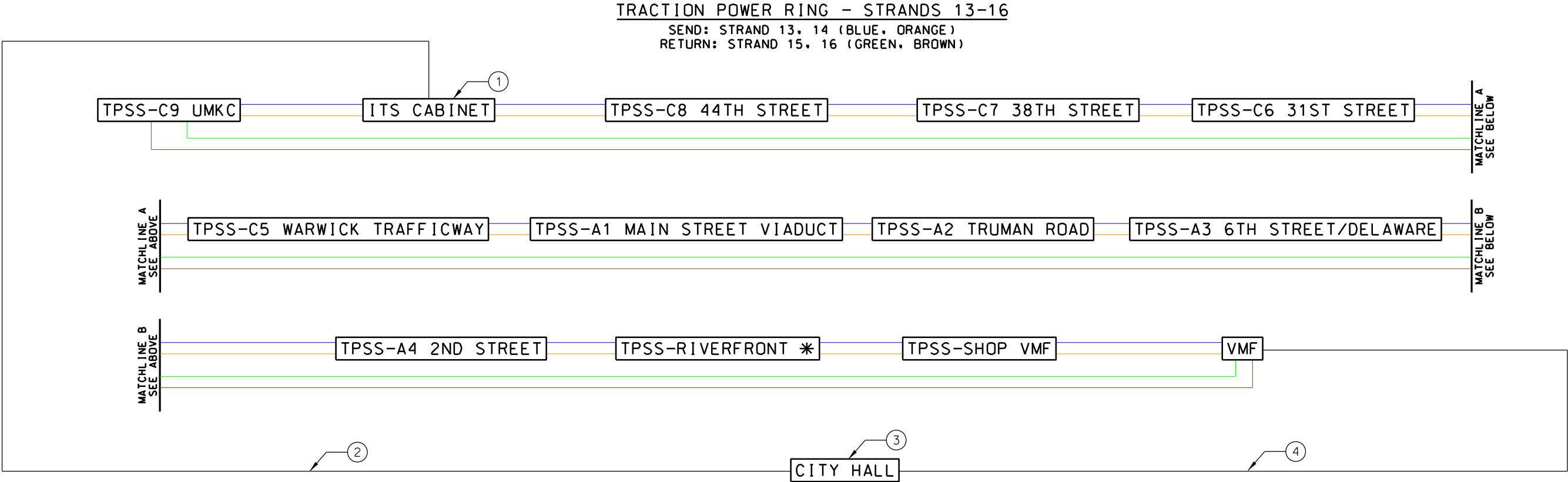
GENERAL NOTES

1. ALL STRANDS SHOWN THIS SHEET RESIDE WITHIN THE BLUE BUFFER TUBE (STRANDS 1-12).
2. RINGS SHALL BE CONFIGURED AND GENERATED FROM VEHICLE MAINTENANCE FACILITY.
3. RINGS TO BE CONFIGURED AS RESILIENT ETHERNET PROTOCOL (REP) RINGS.
4. SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.
5. SHEET IS INCLUDED FOR REFERENCE. WORK THIS PROJECT IS LIMITED TO CONNECTIONS FOR CABINETS INDICATED WITH THE * SYMBOL. ALL OTHER WORK BY THE MAIN STREET EXTENSION PROJECT.

KEYED NOTES

1. EX. LAYER 3 SWITCH IN ITS CABINET AT DR. MARTIN LUTHER KING JR. BLVD
2. STRANDS PER KCMO VIA DR. MARTIN LUTHER KING JR. BLVD AND TROOST AVE.
3. 2-EX. LAYER 3 SWITCHES AT CITY HALL PATCH TO CONNECT TO EX. MULTIMODE FIBER CONNECTION TO THE VMF. ALL KC STREETCAR COMMUNICATIONS (STATIONS, TPSS) SHALL BE ROUTED TO THE VMF.
4. EX. MULTIMODE FIBER CONNECTION

<table><tr><td>REV</td><td>DATE</td><td>DESCRIPTION</td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td colspan="3">PLOT DATE: 12/22/2022</td></tr></table>			REV	DATE	DESCRIPTION																			PLOT DATE: 12/22/2022			<table><tr><td>DESIGNED BY</td><td>AJW</td></tr><tr><td>CHECKED BY</td><td>JLM</td></tr><tr><td>DRAWN BY</td><td>ZJ</td></tr><tr><td>CHECKED BY</td><td>AJW</td></tr><tr><td>APPROVED BY</td><td>NKS</td></tr><tr><td>DATE</td><td>12-23-2022</td></tr></table>		DESIGNED BY	AJW	CHECKED BY	JLM	DRAWN BY	ZJ	CHECKED BY	AJW	APPROVED BY	NKS	DATE	12-23-2022			<table><tr><td>ISSUED FOR BID</td><td>DATE: 12-23-2022</td></tr><tr><td colspan="2"> HDR Engineering, Inc.</td></tr><tr><td colspan="2">10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856</td></tr><tr><td colspan="2">NOT FOR CONSTRUCTION</td></tr></table>		ISSUED FOR BID	DATE: 12-23-2022	 HDR Engineering, Inc.		10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		NOT FOR CONSTRUCTION		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION COMMUNICATIONS DETAILS RING DIAGRAM SHEET 3	<table><tr><td colspan="2">SCALE FOR 22"x34": NOT TO SCALE</td></tr><tr><td colspan="2">FILENAME: Z617</td></tr><tr><td colspan="2">CONTRACT NO.: CONTRACT NO. ***</td></tr><tr><td colspan="2">VOLUME: I</td></tr><tr><td>DRAWING NO.: Z617</td><td>SHEET NO.: 426</td></tr></table>		SCALE FOR 22"x34": NOT TO SCALE		FILENAME: Z617		CONTRACT NO.: CONTRACT NO. ***		VOLUME: I		DRAWING NO.: Z617	SHEET NO.: 426
REV	DATE	DESCRIPTION																																																															
PLOT DATE: 12/22/2022																																																																	
DESIGNED BY	AJW																																																																
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GENERAL NOTES

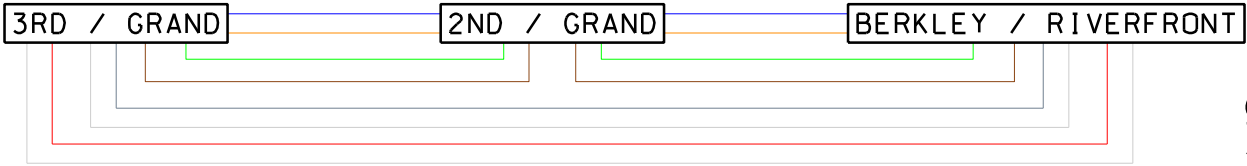
1. ALL STRANDS SHOWN THIS SHEET RESIDE WITHIN THE ORANGE BUFFER TUBE (STRANDS 13-24).
2. RINGS SHALL BE CONFIGURED AND GENERATED FROM VEHICLE MAINTENANCE FACILITY.
3. RINGS TO BE CONFIGURED AS RESILIENT ETHERNET PROTOCOL (REP) RINGS.
4. SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.
5. SHEET IS INCLUDED FOR REFERENCE. WORK THIS PROJECT IS LIMITED TO CONNECTIONS FOR TPSS INDICATED WITH THE * SYMBOL. ALL OTHER WORK BY THE MAIN STREET EXTENSION PROJECT.

KEYED NOTES

1. EX. LAYER 3 SWITCH IN ITS CABINET AT DR. MARTIN LUTHER KING JR. BLVD
2. STRANDS PER KCMO VIA DR. MARTIN LUTHER KING JR. BLVD AND TROOST AVE.
3. 2-EX. LAYER 3 SWITCHES AT CITY HALL PATCH TO CONNECT TO EX. MULTIMODE FIBER CONNECTION TO THE VMF. ALL KC STREETCAR COMMUNICATIONS (STATIONS, TPSS) SHALL BE ROUTED TO THE VMF.
4. EX. MULTIMODE FIBER CONNECTION

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS DETAILS RING DIAGRAM SHEET 4	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLM				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-380-2700 Certificate of Authority: 000856			FILENAME:	Z618
			DRAWN BY	ZJ							CONTRACT NO.:	CONTRACT NO. ***
			CHECKED BY	AJW							VOLUME:	I
			APPROVED BY	NKS							DRAWING NO.:	SHEET NO.:
PLOT DATE: 12/22/2022			4:34:36 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		Z618	427		

TRAFFIC SIGNALS RING 1 - STRANDS 25-32
SEND: STRAND 25, 26 (BLUE, ORANGE)
RETURN: STRAND 27, 28 (GREEN, BROWN)
REDUNDANT: STRAND 29, 30, 31, 32 (SLATE, WHITE, RED, BLACK)



GENERAL NOTES

- 1. ALL STRANDS SHOWN THIS SHEET RESIDE WITHIN THE GREEN BUFFER TUBE (STRANDS 25-36).
- 2. RING SHALL HANG OFF OF THE EXISTING KCMO FIBER-CONNECTED SIGNAL AT 3RD / GRAND.
- 3. SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.

REV	DATE	DESCRIPTION	DESIGNED BY AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS DETAILS RING DIAGRAM SHEET 5	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Z619 CONTRACT NO.: CONTRACT NO. *** VOLUME: I	DRAWING NO.: Z619	SHEET NO.: 428					
			CHECKED BY JLM			 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856											
			DRAWN BY ZJ														
			CHECKED BY AJW														
			APPROVED BY NKS														
PLOT DATE: 12/22/2022			4:31:39 PM	DATE	12-23-2022	NOT FOR CONSTRUCTION											

GENERAL NOTES

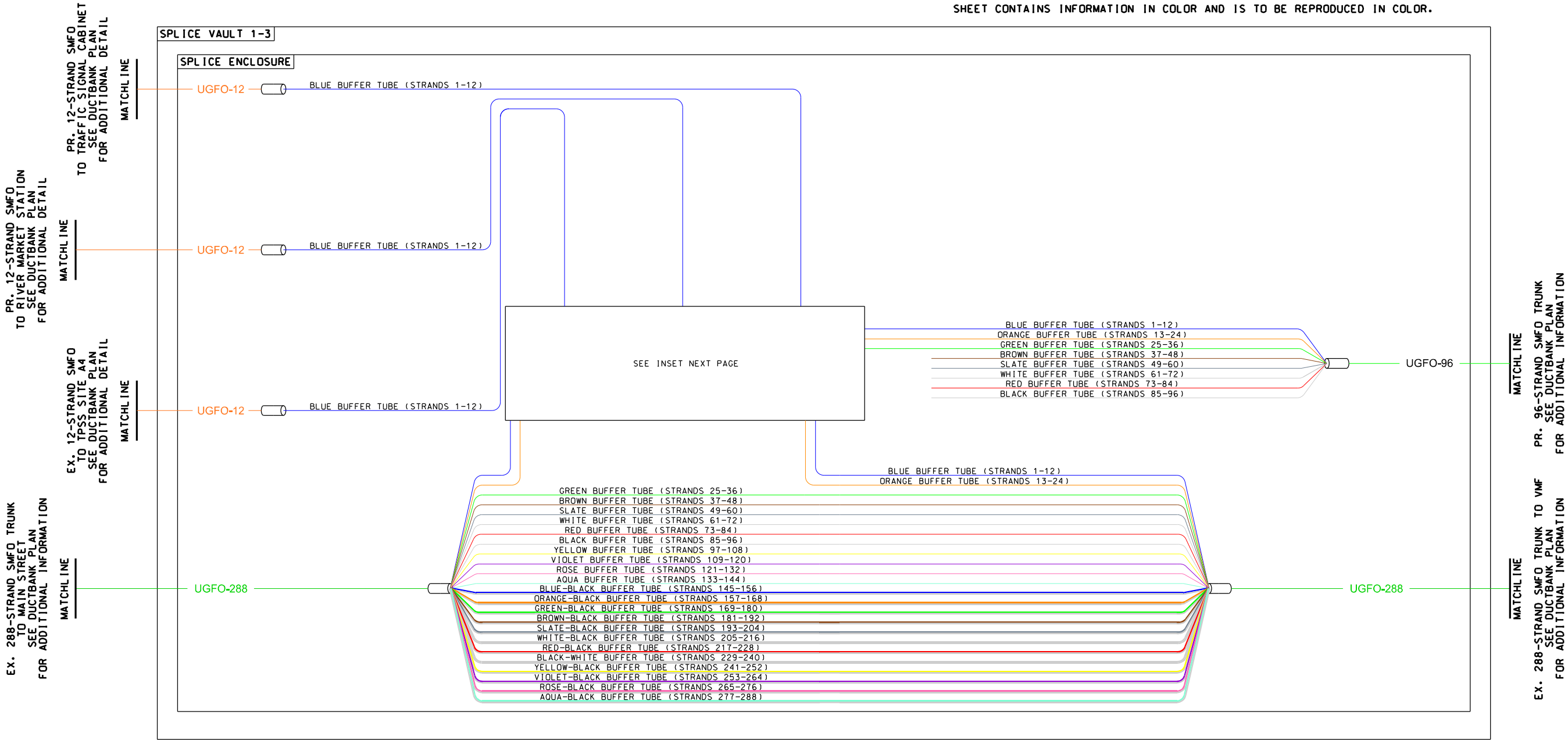
- BUFFER TUBE ASSIGNMENTS:
1. BLUE : STREETCAR
 2. ORANGE : STREETCAR
 3. GREEN : KCMO TRAFFIC SIGNALS
 4. BROWN : KCMO TRAFFIC SIGNALS
 5. SLATE : KCMO TRAFFIC SIGNALS
 6. WHITE : KCMO TRAFFIC SIGNALS
 7. RED : KCMO TRAFFIC SIGNALS
 8. BLACK : KCMO TRAFFIC SIGNALS
 9. YELLOW : KCMO TRAFFIC SIGNALS
 10. VIOLET : KCMO TRAFFIC SIGNALS
 11. ROSE : KCMO
 12. AQUA : KCMO

LEGEND

- ⊗ PROPOSED FUSION SPLICE
⊙ EXISTING FUSION SPLICE

FULL CABLE FIBER SPLICES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.



REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS DETAILS 3RD ST SPLICE	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLM				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			NOT FOR CONSTRUCTION	FILENAME:
			DRAWN BY	ZJ								Z620
			CHECKED BY	AJW								CONTRACT NO.:
			APPROVED BY	NKS								CONTRACT NO. ***
PLOT DATE: 12/22/2022			4:31:42 PM		DATE		12-23-2022	JAMES MERSEREAU - ENGINEER LICENSE NO. 2021043237			VOLUME:	
											DRAWING NO.:	SHEET NO.:
									Z620	429		

BUFFER TUBE ASSIGNMENTS:
 1. BLUE : STREETCAR
 2. ORANGE : STREETCAR
 3. GREEN : KCMO TRAFFIC SIGNALS
 4. BROWN : KCMO TRAFFIC SIGNALS
 5. SLATE : KCMO TRAFFIC SIGNALS
 6. WHITE : KCMO TRAFFIC SIGNALS
 7. RED : KCMO TRAFFIC SIGNALS
 8. BLACK : KCMO TRAFFIC SIGNALS
 9. YELLOW : KCMO TRAFFIC SIGNALS
 10. VIOLET : KCMO TRAFFIC SIGNALS
 11. ROSE : KCMO
 12. AQUA : KCMO

 PROPOSED FUSION SPLICE
 EXISTING FUSION SPLICE

	PR. 12-STRAND SMFO TO RIVER MARKET STATION SEE DUCTBANK PLAN FOR ADDITIONAL DETAIL	
	<u>MATCHLINE</u>	
EX. 12-STRAND SMFO TO TPSS SITE A4 SEE DUCTBANK PLAN FOR ADDITIONAL DETAIL		PR. 12-STRAND SMFO TO TRAFFIC SIGNAL CABINET SEE DUCTBANK PLAN FOR ADDITIONAL DETAIL



GENERAL NOTES

- BUFFER TUBE ASSIGNMENTS:
- 1. BLUE : STREETCAR
 - 2. ORANGE : STREETCAR
 - 3. GREEN : KCMO TRAFFIC SIGNALS
 - 4. BROWN : KCMO TRAFFIC SIGNALS
 - 5. SLATE : KCMO TRAFFIC SIGNALS
 - 6. WHITE : KCMO TRAFFIC SIGNALS
 - 7. RED : KCMO TRAFFIC SIGNALS
 - 8. BLACK : KCMO TRAFFIC SIGNALS
 - 9. YELLOW : KCMO TRAFFIC SIGNALS
 - 10. VIOLET : KCMO TRAFFIC SIGNALS
 - 11. ROSE : KCMO
 - 12. AQUA : KCMO

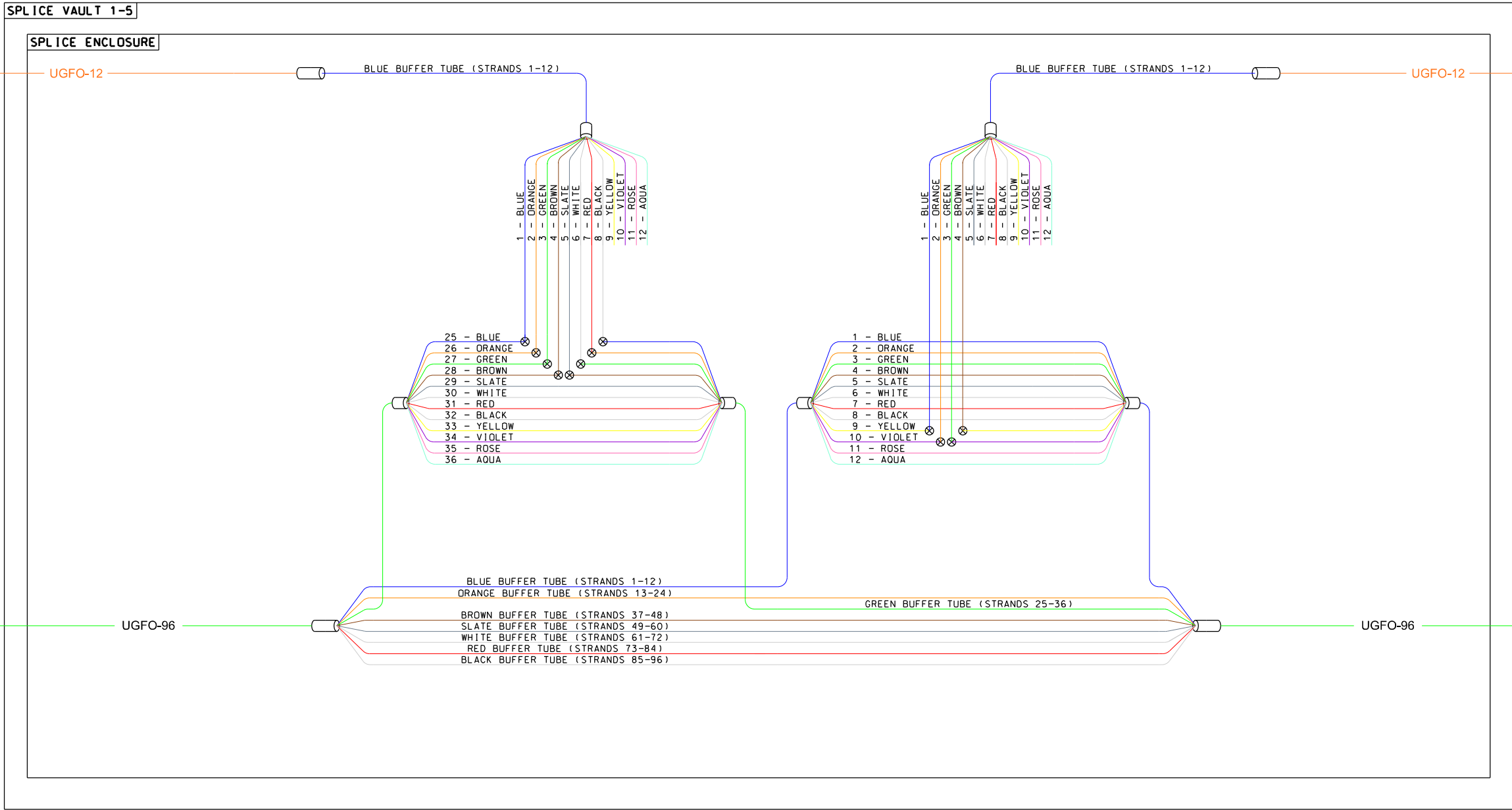
LEGEND

- ⊗ PROPOSED FUSION SPLICE
- ⊙ EXISTING FUSION SPLICE

FULL CABLE FIBER SPLICES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.

PR. 12-STRAND SMFO
TO TRAFFIC SIGNAL CABINET
SEE DUCTBANK PLAN
FOR ADDITIONAL DETAIL

MATCHLINE



MATCHLINE

PR. 12-STRAND SMFO
TO TRAIN CONTROL CABINET
SEE DUCTBANK PLAN
AND STATION COMMUNICATION PLAN
FOR ADDITIONAL DETAIL

MATCHLINE

PR. 96-STRAND SMFO TRUNK
SEE DUCTBANK PLAN
FOR ADDITIONAL INFORMATION

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: Z622 CONTRACT NO.: CONTRACT NO. *** VOLUME: 1	DRAWING NO.: Z622	SHEET NO.: 431		
			CHECKED BY	JLM										
			DRAWN BY	ZJ										
			CHECKED BY	AJW										
			APPROVED BY	NKS										
PLOT DATE: 12/22/2022			4:31:48 PM		DATE 12-23-2022		10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		COMMUNICATIONS DETAILS 2ND ST SPLICE					
							NOT FOR CONSTRUCTION							

GENERAL NOTES

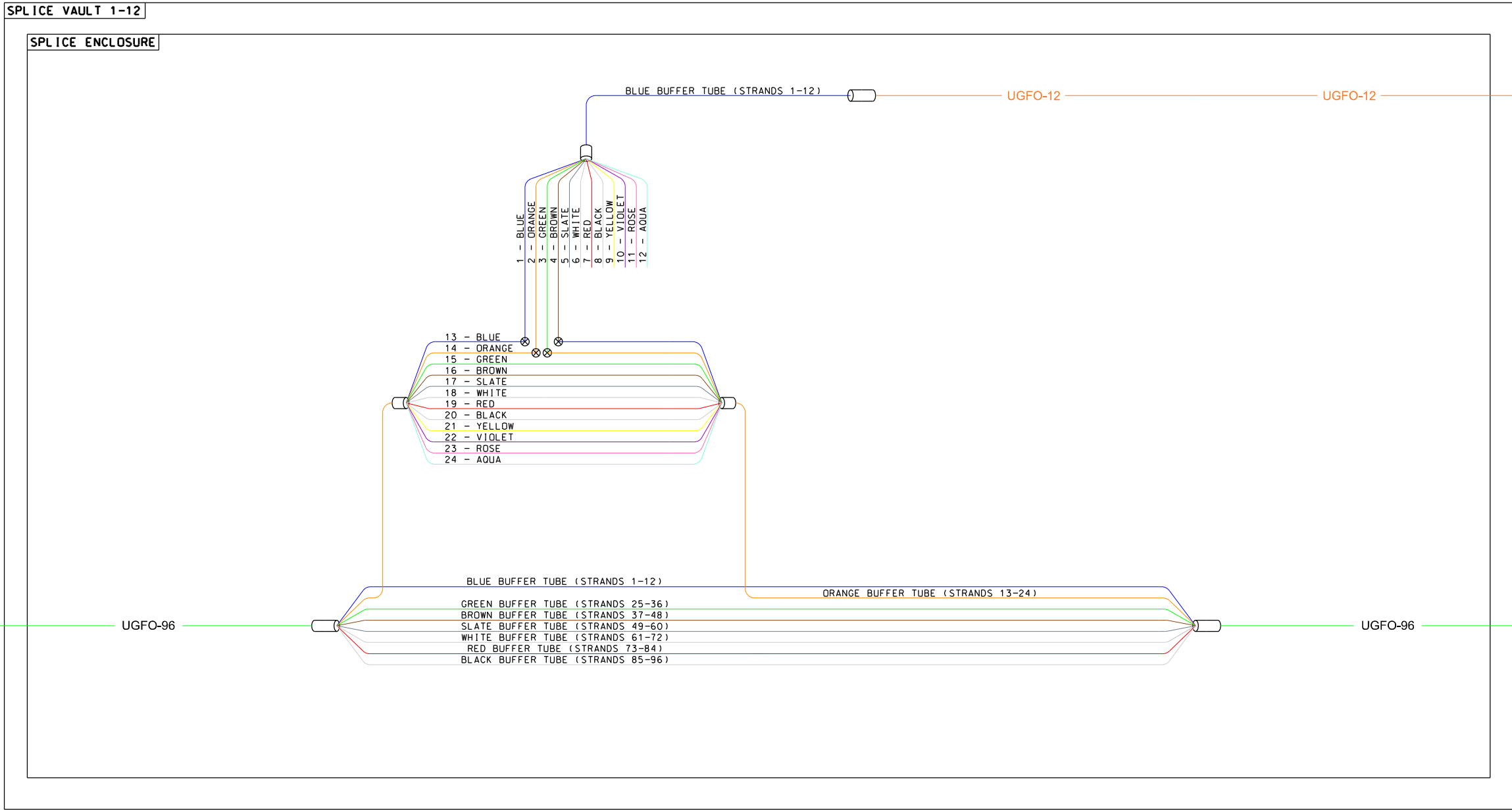
- BUFFER TUBE ASSIGNMENTS:
- 1. BLUE : STREETCAR
 - 2. ORANGE : STREETCAR
 - 3. GREEN : KCMO TRAFFIC SIGNALS
 - 4. BROWN : KCMO TRAFFIC SIGNALS
 - 5. SLATE : KCMO TRAFFIC SIGNALS
 - 6. WHITE : KCMO TRAFFIC SIGNALS
 - 7. RED : KCMO TRAFFIC SIGNALS
 - 8. BLACK : KCMO TRAFFIC SIGNALS
 - 9. YELLOW : KCMO TRAFFIC SIGNALS
 - 10. VIOLET : KCMO TRAFFIC SIGNALS
 - 11. ROSE : KCMO
 - 12. AQUA : KCMO

LEGEND

- ⊗ PROPOSED FUSION SPLICE
- ⊙ EXISTING FUSION SPLICE

FULL CABLE FIBER SPLICES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.



REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS DETAILS SUB STATION SPLICE	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLM							FILENAME: Z623	
			DRAWN BY	ZJ							CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY	AJW							VOLUME: 1	
			APPROVED BY	NKS							DRAWING NO.: Z623	SHEET NO.: 432
PLOT DATE: 12/22/2022			4:31:51 PM		DATE 12-23-2022		10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		NOT FOR CONSTRUCTION			

GENERAL NOTES

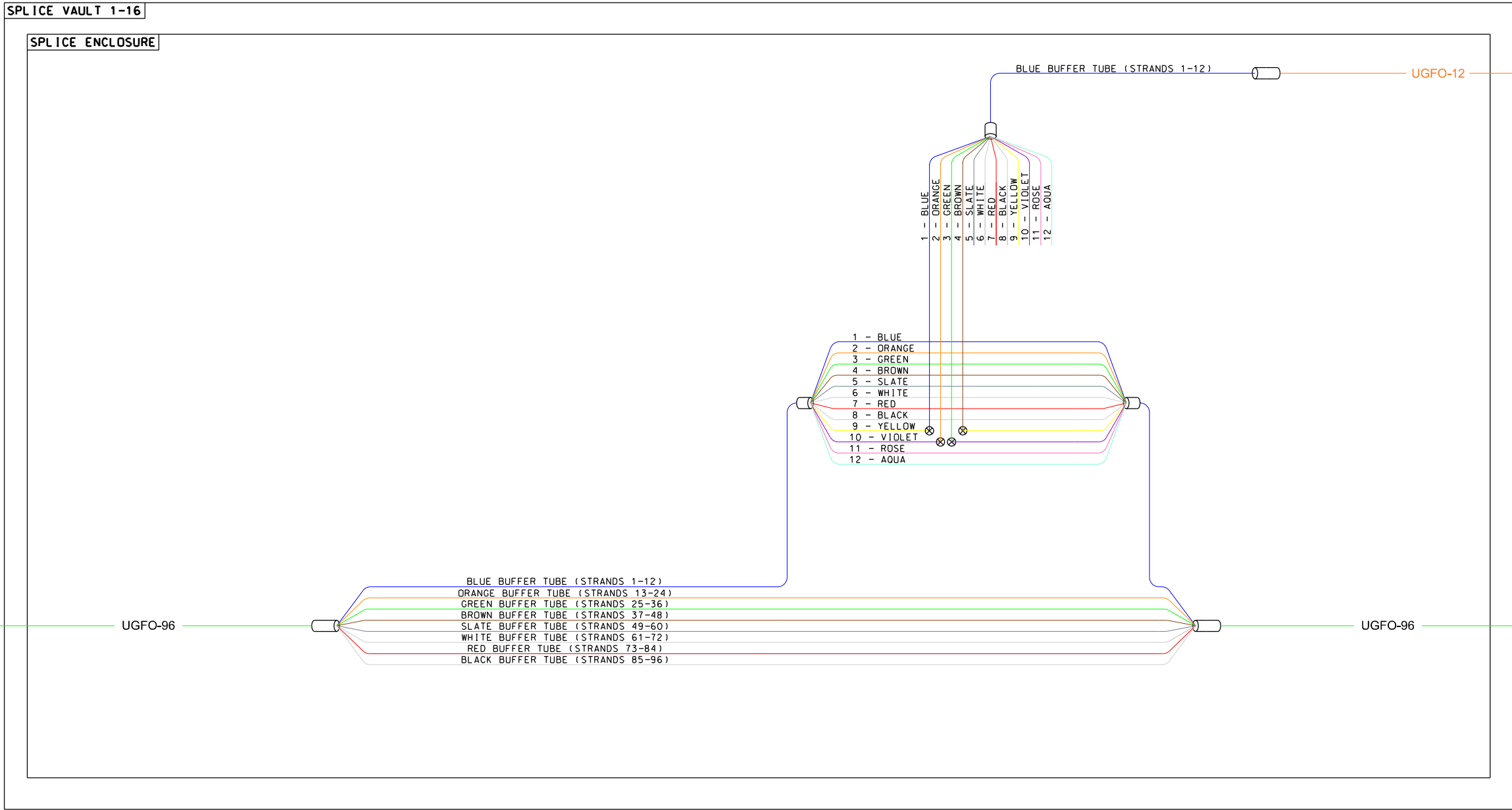
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- 1. BLUE : STREETCAR
 - 2. ORANGE : STREETCAR
 - 3. GREEN : KCMO TRAFFIC SIGNALS
 - 4. BROWN : KCMO TRAFFIC SIGNALS
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 - 8. BLACK : KCMO TRAFFIC SIGNALS
 - 9. YELLOW : KCMO TRAFFIC SIGNALS
 - 10. VIOLET : KCMO TRAFFIC SIGNALS
 - 11. ROSE : KCMO
 - 12. AQUA : KCMO

LEGEND

- ⊗ PROPOSED FUSION SPLICE
- ⊙ EXISTING FUSION SPLICE

FULL CABLE FIBER SPLICES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.



REV	DATE	DESCRIPTION	DESIGNED BY	AJW		 12-23-2022 JAMES MERSEREAU - ENGINEER LICENSE NO. 2021043237	ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
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PLOT DATE: 12/22/2022			4:31:54 PM		DATE	12-23-2022					DRAWING NO.:	SHEET NO.:	
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GENERAL NOTES

- BUFFER TUBE ASSIGNMENTS:
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 - 2. ORANGE : STREETCAR
 - 3. GREEN : KCMO TRAFFIC SIGNALS
 - 4. BROWN : KCMO TRAFFIC SIGNALS
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 - 6. WHITE : KCMO TRAFFIC SIGNALS
 - 7. RED : KCMO TRAFFIC SIGNALS
 - 8. BLACK : KCMO TRAFFIC SIGNALS
 - 9. YELLOW : KCMO TRAFFIC SIGNALS
 - 10. VIOLET : KCMO TRAFFIC SIGNALS
 - 11. ROSE : KCMO
 - 12. AQUA : KCMO

LEGEND

- ⊗ PROPOSED FUSION SPLICE
- ⊙ EXISTING FUSION SPLICE

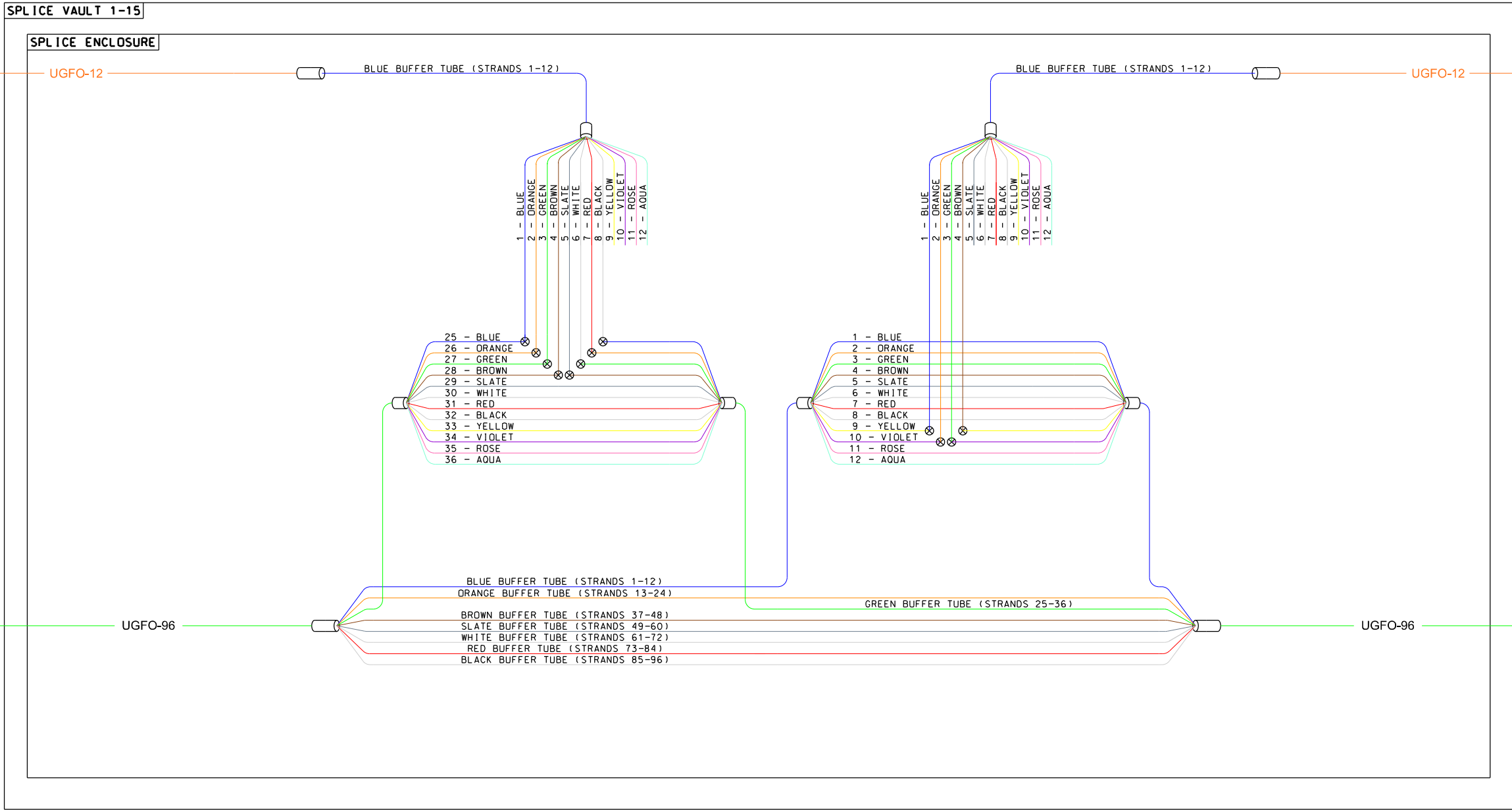
FULL CABLE FIBER SPLICES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.

PR. 12-STRAND SMFO
TO TRAFFIC SIGNAL CABINET
SEE DUCTBANK PLAN
FOR ADDITIONAL DETAIL

PR. 12-STRAND SMFO
TO TRAIN CONTROL CABINET
SEE DUCTBANK PLAN
AND STATION COMMUNICATION PLAN
FOR ADDITIONAL DETAIL

PR. 96-STRAND SMFO TRUNK
SEE DUCTBANK PLAN
FOR ADDITIONAL INFORMATION

PR. 96-STRAND SMFO TRUNK
SEE DUCTBANK PLAN
FOR ADDITIONAL INFORMATION



REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	COMMUNICATIONS DETAILS BERKLEY PKWY SPLICE	SCALE FOR 22"x34": NOT TO SCALE		
			CHECKED BY	JLM				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			NOT FOR CONSTRUCTION	FILENAME:	Z625
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GENERAL NOTES

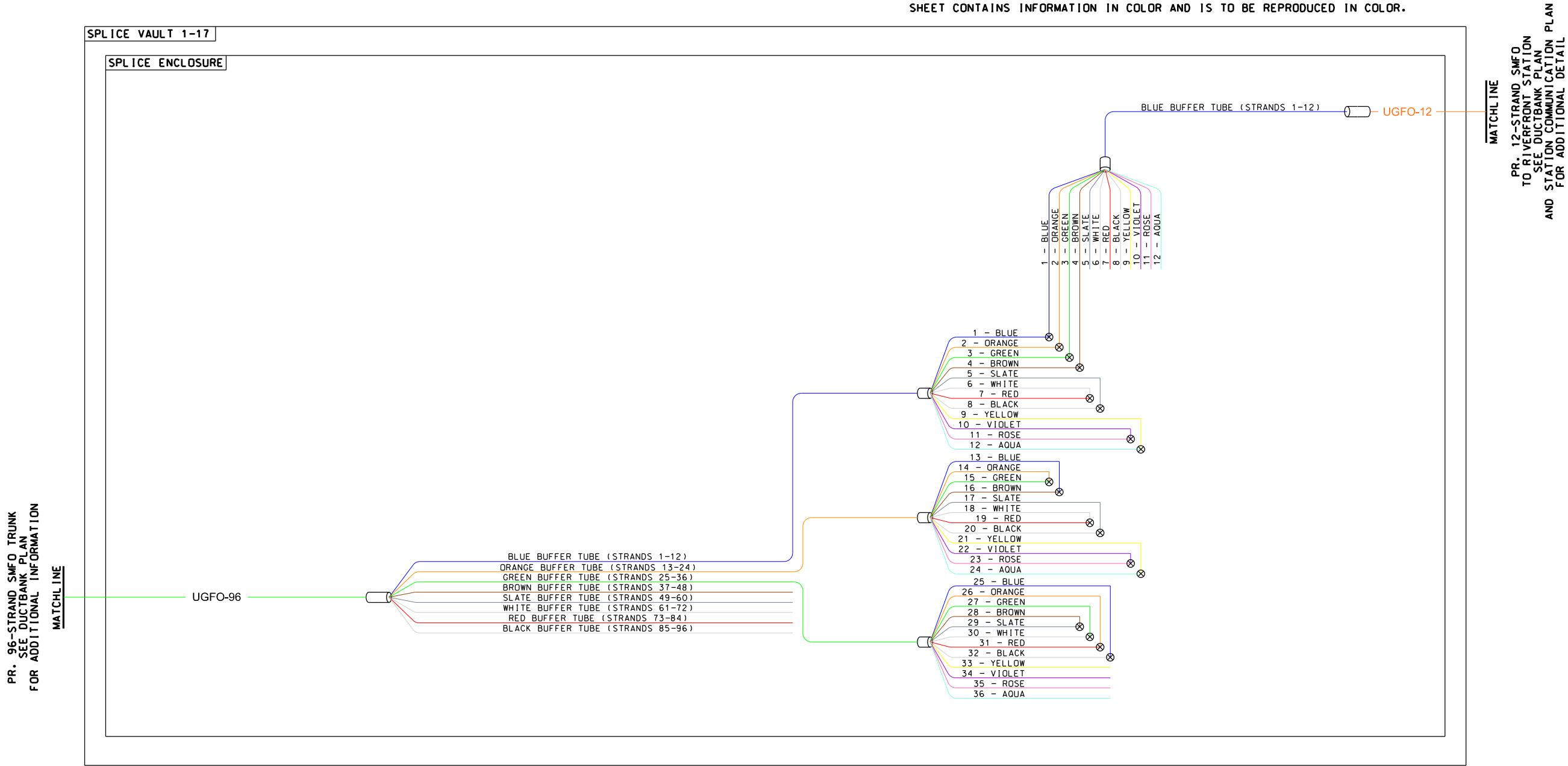
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 - 9. YELLOW : KCMO TRAFFIC SIGNALS
 - 10. VIOLET : KCMO TRAFFIC SIGNALS
 - 11. ROSE : KCMO
 - 12. AQUA : KCMO

LEGEND

- ⊗ PROPOSED FUSION SPLICE
- ⊙ EXISTING FUSION SPLICE

FULL CABLE FIBER SPLICES SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.

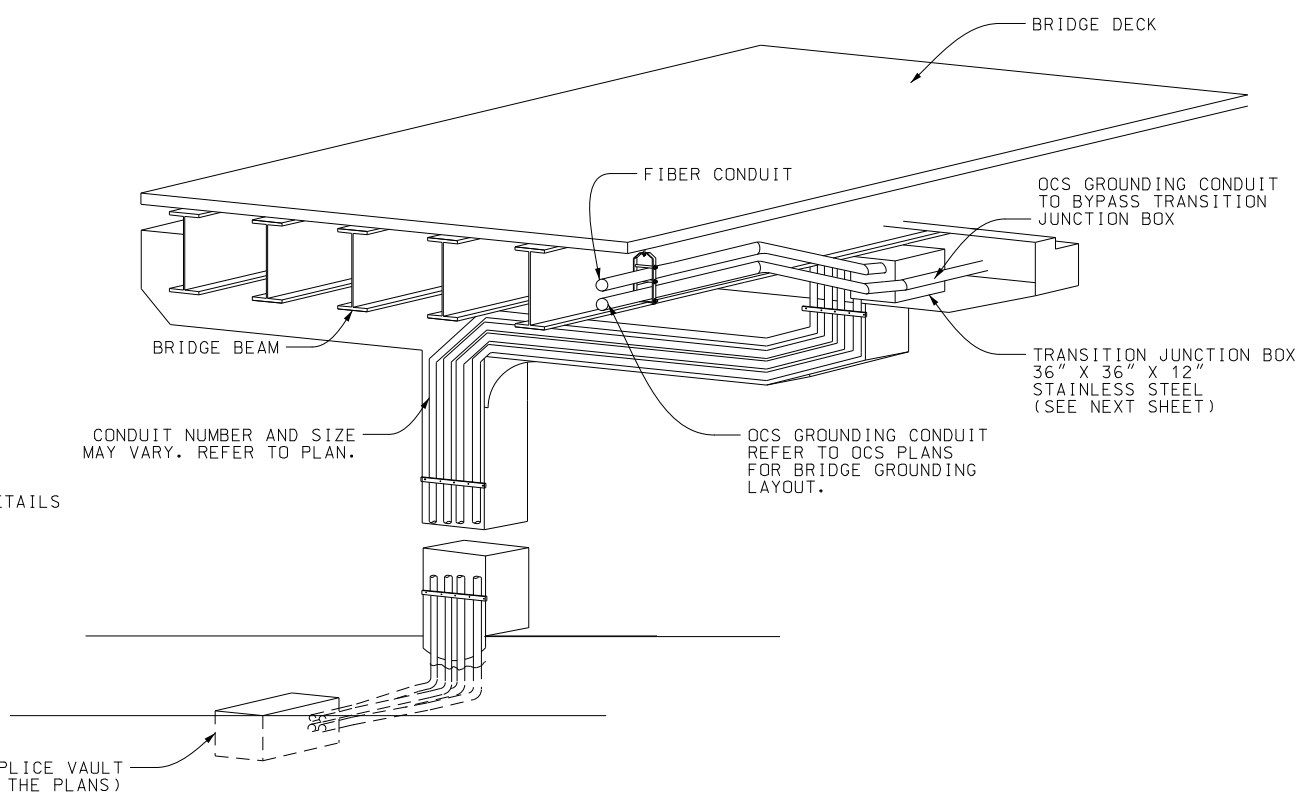
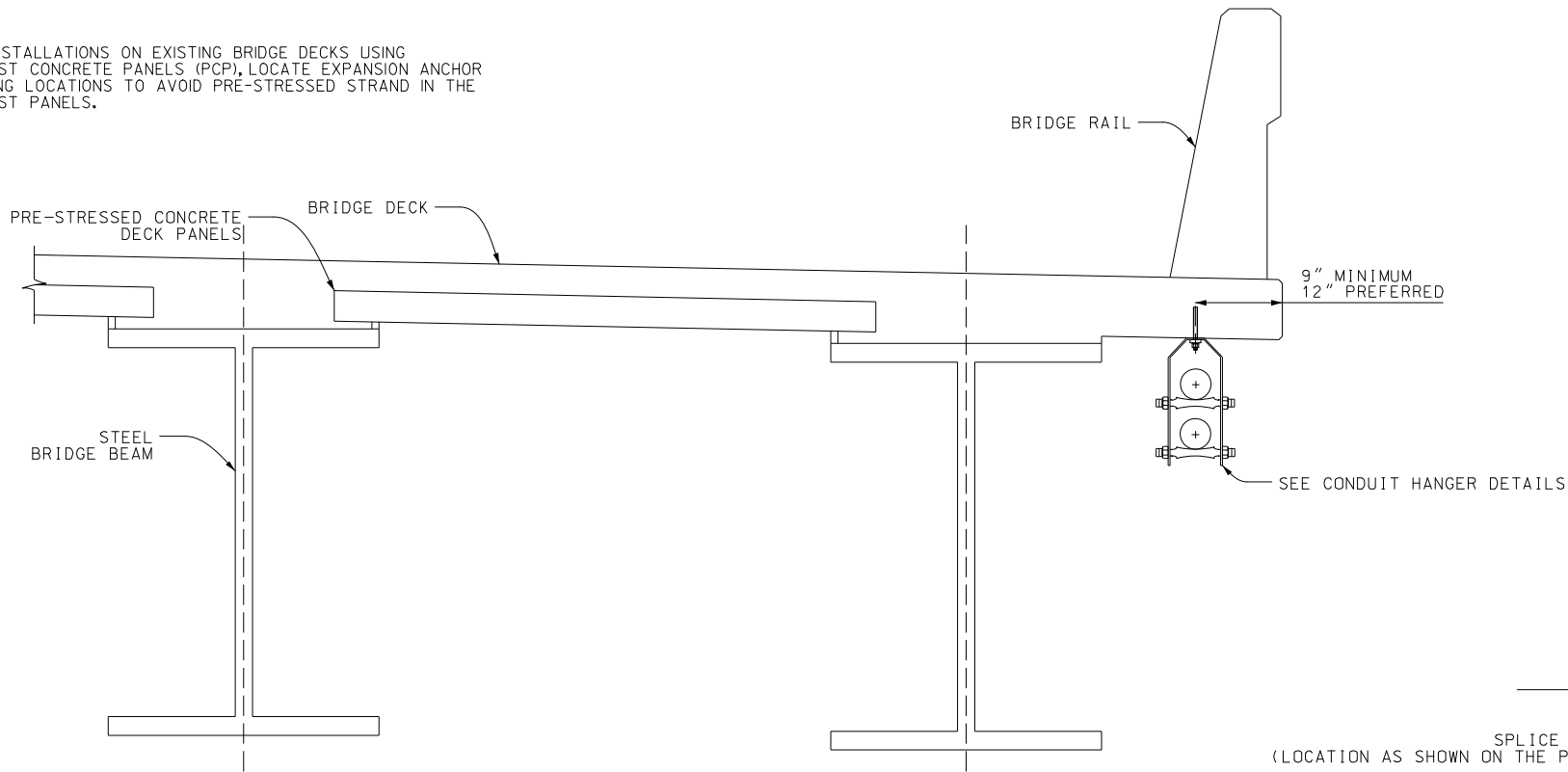
SHEET CONTAINS INFORMATION IN COLOR AND IS TO BE REPRODUCED IN COLOR.



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			DRAWN BY	ZJ							
			CHECKED BY	AJW							
			APPROVED BY	NKS							
PLOT DATE: 12/22/2022			4:32:00 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION				

NOTE:

I. FOR INSTALLATIONS ON EXISTING BRIDGE DECKS USING PRECAST CONCRETE PANELS (PCP), LOCATE EXPANSION ANCHOR DRILLING LOCATIONS TO AVOID PRE-STRESSED STRAND IN THE PRECAST PANELS.

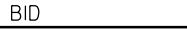


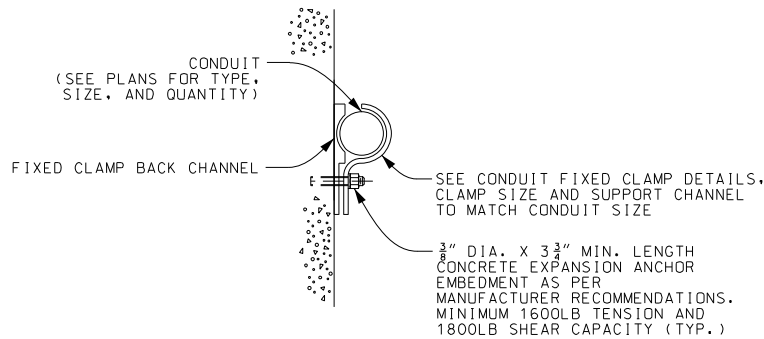
STRUCTURE MOUNTED CONDUIT - CONCRETE BRIDGE DECK WITH PRECAST PANELS

REFER TO Z625 FOR GENERAL NOTES

UNDERSIDE CONDUIT HANGER TRANSITION DETAIL

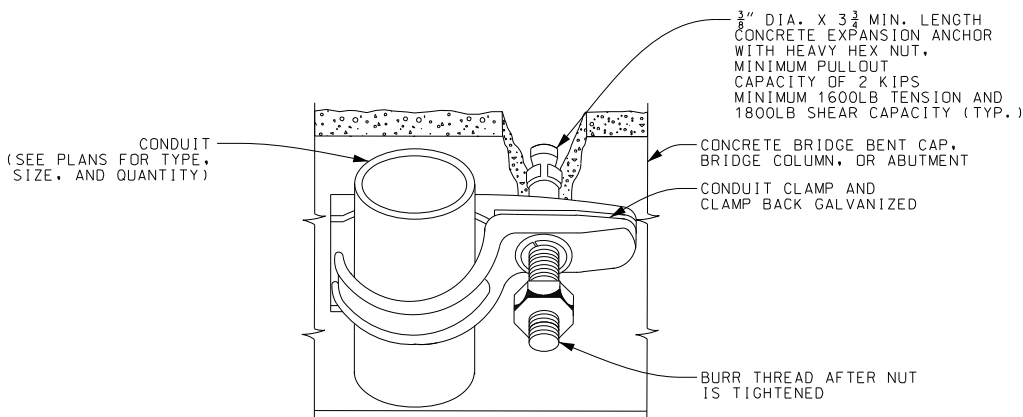
1. THE ALTERNATIVE MOUNTING CONDUIT HANGER SUPPORT MOUNTING DETAIL FOR STEEL I-BEAM STRUCTURES AS SHOWN IS A SUGGESTED DETAIL FOR STEEL STRUCTURES. SUBMIT DETAILS FOR THE CONFIGURATION SHOWN ON THIS SHEET VIA SHOP DRAWINGS AND INCLUDE STRUCTURAL LOAD ANALYSIS, SUPPORT MEMBER AND CONNECTION DESIGN. SEAL ALL CALCULATIONS AND SHOP DRAWINGS BY A MISSOURI P.E.
2. CONDUIT HANGER SUPPORT MOUNTING DETAILS FOR CONCRETE BRIDGE DECK WITH PRECAST PANELS AS SHOWN ARE A SUGGESTED METHOD FOR PRE-STRESSED CONCRETE BEAM STRUCTURES. SUBMIT ANY DEVIATION FROM THESE DETAILS VIA SHOP DRAWING AND INCLUDE STRUCTURAL LOAD ANALYSIS, SUPPORT MEMBER, AND CONNECTION DESIGN. SEAL ALL CALCULATIONS AND SHOP DRAWINGS BY A MISSOURI P.E.
3. LOCATE AUXILIARY CONDUIT HANGER SUPPORTS FOR STEEL STRUCTURES AT A MAXIMUM 5'-0" SPACING.
4. FOR CONDUIT LOADS LOCATED BETWEEN BEAMS EXCEEDING 5 LBS PER FT, FURNISH STRUCTURAL LOAD ANALYSIS CALCULATIONS FOR ADJACENT BEAMS IN THE SHOP DRAWING SUBMISSION.
5. SUBMIT DESIGN DETAILS FOR STRUCTURE WITH CATHODIC PROTECTION IN THE SHOP DRAWING SUBMISSION.
6. DO NOT EXTEND CONDUIT HANGERS BELOW THE BOTTOM OF THE BRIDGE BEAMS (ANY EXCEPTIONS AT END SPANS ARE SUBJECT TO APPROVAL).
7. DRILLING IN PRE-STRESSED BEAMS OR FIELD WELDING OF STEEL BEAMS IS NOT PERMITTED. SUBMIT ANY EXCEPTIONS ON A CASE BY CASE BASIS FOR EVALUATION AND APPROVAL BY THE ENGINEER.
8. ENSURE ALL CONDUIT HANGER ASSEMBLIES ARE FURNISHED AND SUPPLIED BY THE CONDUIT HANGER MANUFACTURER.
9. GALVANIZE ALL HARDWARE AND STRUCTURAL STEEL THAT IS NOT STAINLESS STEEL. ENSURE ALL BOLT HARDWARE USED TO SECURE HANGERS TO STEEL STRUCTURES CONFORMS TO A325 FOR HIGH STRENGTH. ENSURE ALL EXPANSION ANCHORS CONFORM TO ASTM A307. SEPARATE DISSIMILAR MATERIALS FOR USE OF GALVANIZED HARDWARE WITH WEATHERING STEEL GIRDERS.
10. SELECT CONDUIT LENGTHS SO THAT COUPLINGS DO NO COINCIDE WITH CONDUIT HANGER LOCATIONS.
- II. PROVIDE A FLAT PULL CORD IN EACH CONDUIT AND INNER DUCT TO ALLOW FOR INSTALLATION OF FUTURE CABLES. REFER TO Z610 FOR ADDITIONAL CONDUIT DETAILS.
12. PROVIDE A TRANSITION JUNCTION BOX FOR CONDUIT ACCESS LOCATED OUTSIDE THE ABUTMENTS FOR BRIDGE SPANS < 800 FT. FOR BRIDGE SPANS > 800 FT., LOCATE AN ADDITIONAL JUNCTION BOX FOR CONDUIT ACCESS NEAR THE MID-SPAN/PIER.
13. PROVIDE CONDUIT OF THE TYPE AND CONFIGURATION SHOWN ON THE PLANS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
14. BOND ALL EXTERNAL STRUCTURE MOUNTED CONDUIT THROUGHOUT ENTIRE LENGTH OF RUN AND GROUND THE RUN AT VAULT LOCATIONS.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE				
			CHECKED BY	JLM				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		CONDUIT TRANSITION DETAIL	FILENAME:	Z628		
			DRAWN BY	ZJ							CONTRACT NO.:		CONTRACT NO. ***	
			CHECKED BY	AJW							VOLUME:			1
			APPROVED BY	NKS							DRAWING NO.:			
PLOT DATE: 12/22/2022			4:32:04 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		Z628	437				

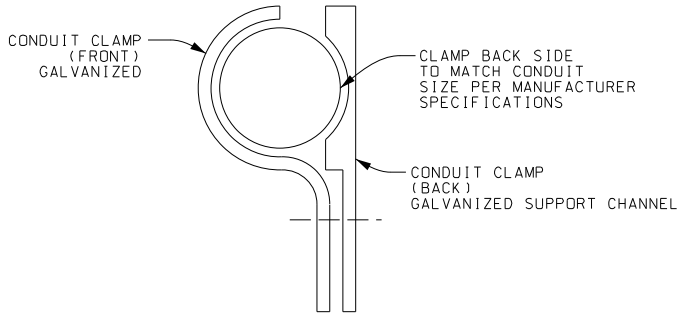


CONDUIT FIXED CLAMP

CONDUIT CLAMP DETAILS (TYP.)

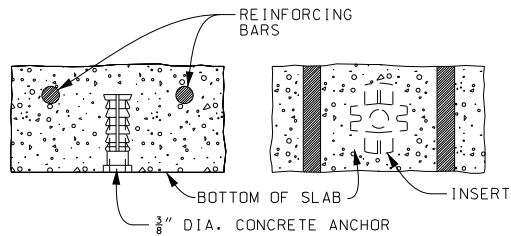


CONDUIT FIXED CLAMP BACK CHANNEL

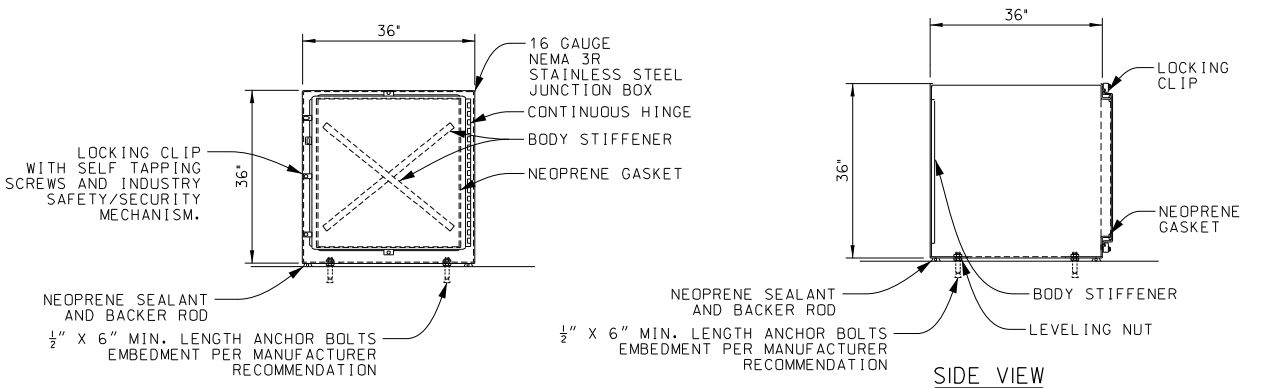


CONDUIT FIXED CLAMP DETAILS

SIDE VIEW

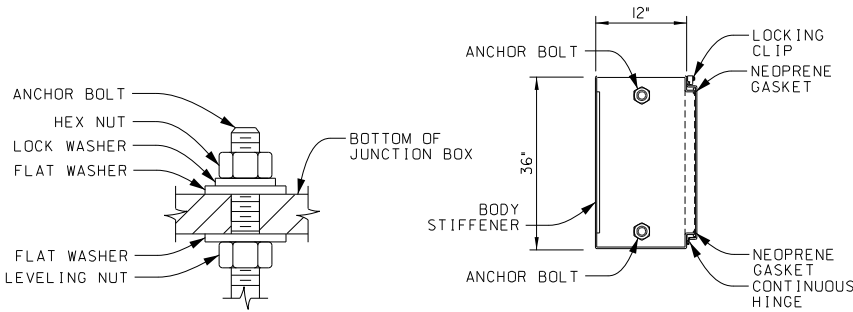


CONDUIT FIXED CLAMP CONCRETE INSERT DETAIL



FRONT VIEW

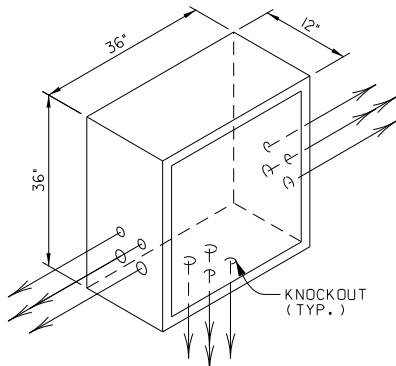
SIDE VIEW



ANCHOR BOLT DETAIL

(MAY VARY ON MOUNTING SCENARIO)

TOP VIEW



ISOMETRIC VIEW

36" X 36" X 12" STAINLESS STEEL TRANSITION JUNCTION BOX DETAIL

- NOTES:
1. TRANSITION BOX AS DEPICTED IS TOP MOUNT. ACTUAL ANCHOR FASTENERS AND KNOCKOUT LOCATION WILL VARY BASED UPON MOUNT LOCATION AND MANUFACTURER RECOMMENDATIONS.
 2. SECURE THE TRANSITION BOX COVER USING SELF TAPPING SCREWS WITH INDUSTRY SAFETY/SECURITY MECHANISM.
 3. TYPICAL KNOCKOUT LOCATIONS SHOWN ARE FOR DIAGRAMMATIC PURPOSES ONLY. THE NUMBER OF TRANSITION BOXES REQUIRED AT A GIVEN LOCATION WILL VARY DEPENDING ON THE NUMBER OF CONDUITS AND CABLE STORAGE REQUIREMENTS FOR CABLING RUN(S).

GENERAL NOTES:

1. ENSURE ALL DUCT/CONDUIT BENDS ARE IN ACCORDANCE WITH THE LATEST VERSION OF THE NFPA 70, NATIONAL ELECTRICAL CODE AND AS RECOMMENDED BY THE MANUFACTURER.
2. UTILIZE SEPARATE TRANSITION JUNCTION BOXES FOR COMMUNICATIONS AND ELECTRICAL CONDUIT RUNS.
3. MAINTAIN CONSTANT SLOPE IN ALL DUCT/CONDUIT RUNS.
4. ENSURE MAXIMUM SPACING OF CONDUIT CLAMPS IS 5'-0" C-C.
5. GALVANIZE ALL HARDWARE, INCLUDING ANCHOR BOLTS, NUTS, AND WASHERS. ENSURE ALL EXPANSION ANCHORS CONFORM TO ASTM A307.
6. PROVIDE A MINIMUM NEMA 3R JUNCTION BOXES. CONSTRUCT ALL JUNCTION BOXES IN ACCORDANCE WITH MANUFACTURER SPECIFICATIONS. INSTALL JUNCTION BOXES IN ACCORDANCE WITH THE LATEST EDITION OF NFPA 70, NATIONAL ELECTRICAL CODE.
7. INSTALL ALL CONDUIT SWEEPS INTO JUNCTION BOXES IN ACCORDANCE WITH ALLOWABLE BEND RADIUS OF THE INSTALLED CABLE.
8. INSTALL CONDUIT SUPPORT WITHIN 3'-0" OF ALL ENCLOSURES AND CONDUIT TERMINATIONS.

REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		4:32:07 PM

DESIGNED BY	AJW
CHECKED BY	JLM
DRAWN BY	ZJ
CHECKED BY	AJW
APPROVED BY	NKS
DATE	12-23-2022



JAMES MERSEREAU - ENGINEER
LICENSE NO. 2021043237

ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

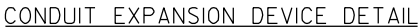
CONDUIT
TRANSITION BOX DETAIL

SCALE FOR 22"x34": NOT TO SCALE	
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CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.:	SHEET NO.:
Z629	438

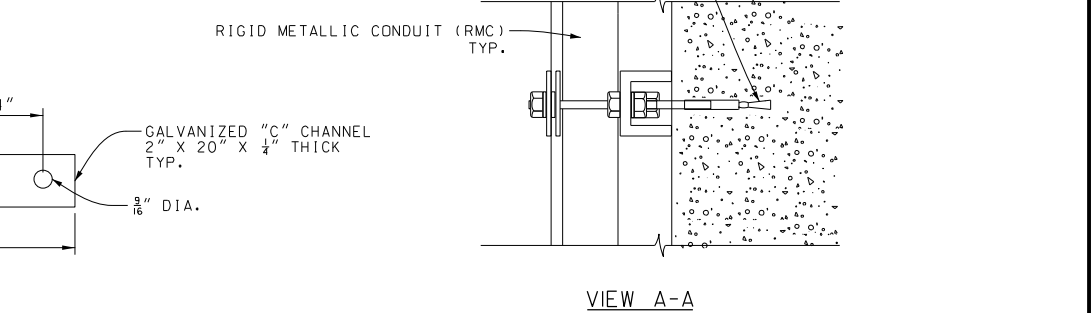
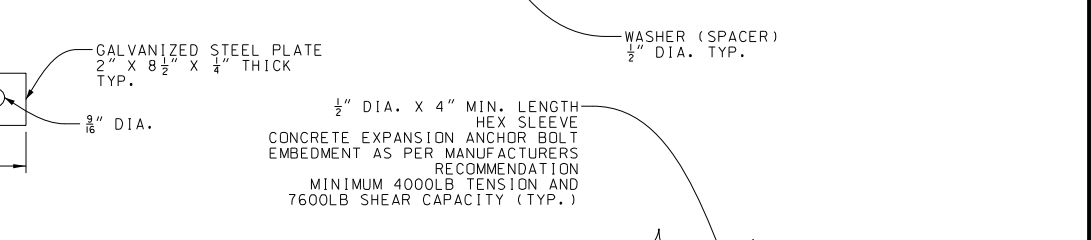
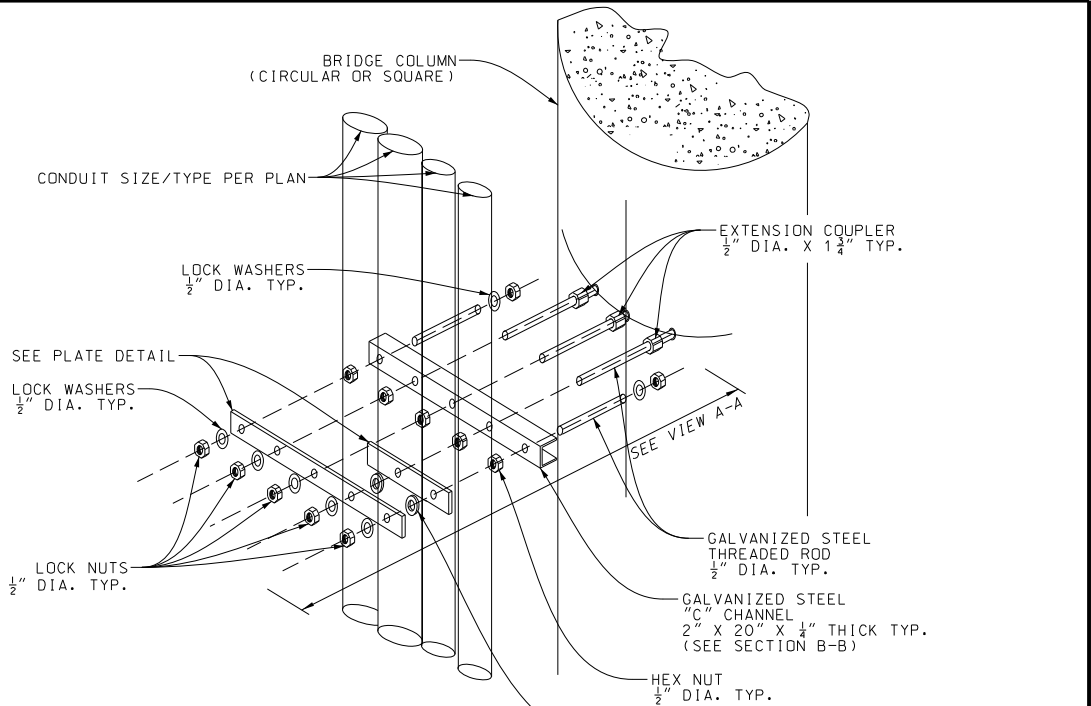
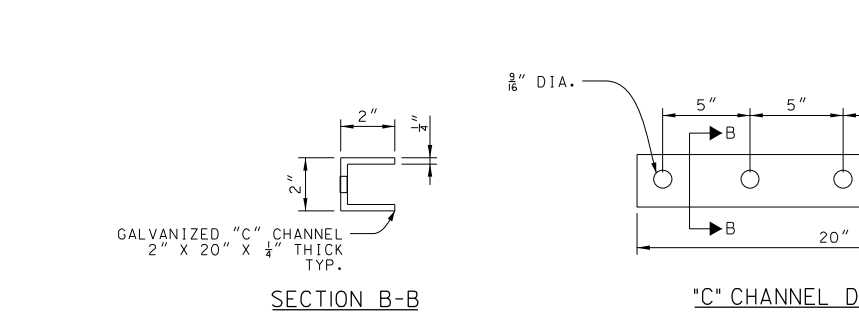
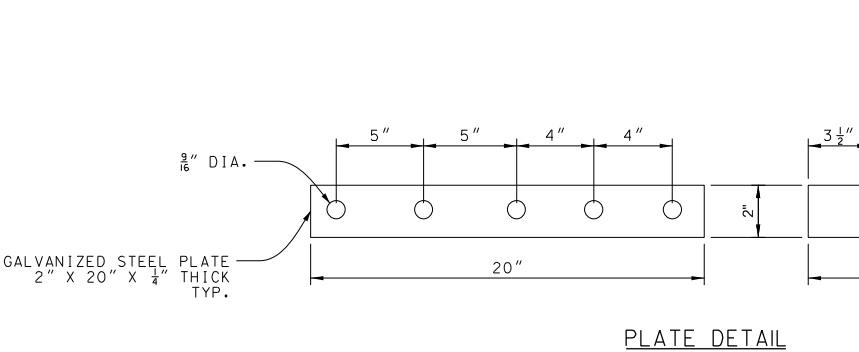
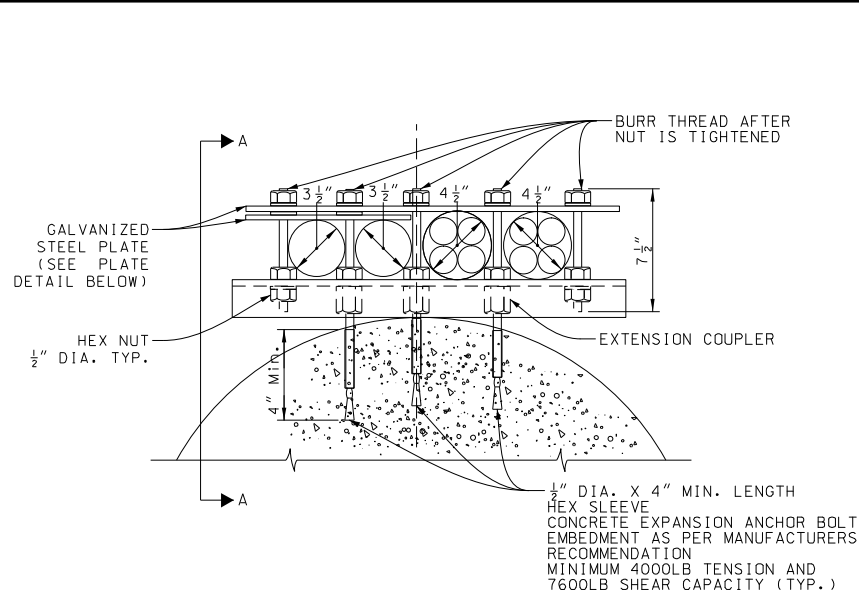
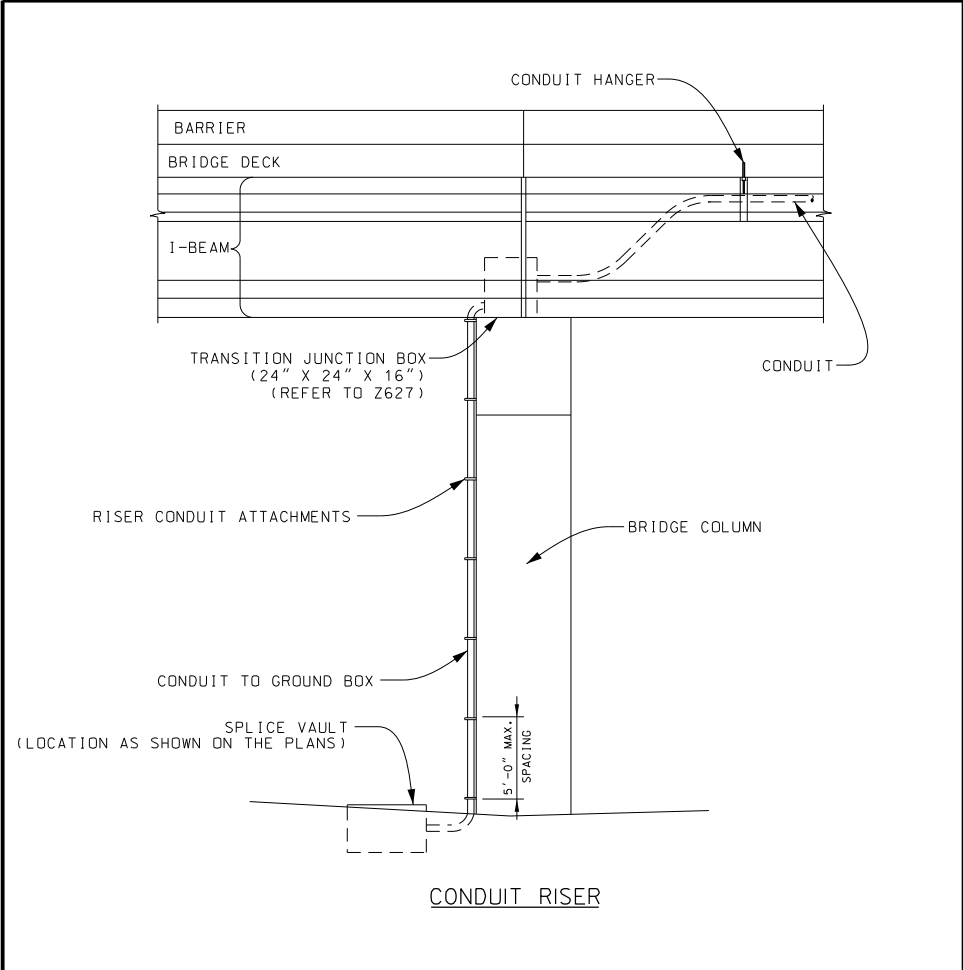


GENERAL NOTES:

1. INSTALL EXPANSION DEVICE AT ALL OPEN JOINTS, AT EACH END OF BRIDGE ABUTMENTS AND BETWEEN BRIDGE BENTS, ALLOWING FOR 3" MOVEMENT.
2. PROVIDE A MINIMUM OF TWO (2) EXPANSION JOINTS. ENSURE EXPANSION JOINT SPACING DOES NOT EXCEED MANUFACTURER RECOMMENDATIONS.
3. ENSURE CONDUIT LENGTHS ARE SELECTED SO THAT COUPLINGS DO NOT COINCIDE WITH HANGER LOCATIONS.
4. BOND ALL EXTERNAL STRUCTURE MOUNTED CONDUIT THROUGHOUT ENTIRE LENGTH OF RUN AND GROUND THE RUN AT VAULT LOCATIONS.



REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
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			DATE 12-23-2022				CONDUIT		DRAWING NO.:	
							EXPANSION/DEFLECTION POINT		SHEET NO.:	
							NOT FOR CONSTRUCTION		Z630	
									439	



- GENERAL NOTES:**
- UTILIZE AN APPROXIMATE LENGTH OF FLEXIBLE CONDUIT AT EXPOSED CONNECTIONS OF 2 TIMES ANTICIPATED MOVEMENT OR 4'-0" MINIMUM.
 - SIZE ALL TRANSITION BOXES AND SURFACE MOUNTED PULL BOXES PER NATIONAL ELECTRICAL CODE ARTICLE 314 BOXES AND FITTINGS.
 - FOR UNDER BRIDGE LOCATIONS, ENSURE ALL JUNCTION BOXES ARE KEPT INACCESSIBLE FROM GENERAL PUBLIC AND PLACED A MINIMUM 10'-0" ABOVE SURROUNDING GROUND.
 - REFER TO BRIDGE CONDUIT DETAILS FOR ADDITIONAL NOTES AND ATTACHMENT INFORMATION FOR RISER CONDUIT.
 - SEE PLAN SHEETS FOR NUMBER AND SIZE OF CONDUIT(S) TO BE INSTALLED.
 - ENSURE MAXIMUM SPACING BETWEEN RISER CONDUIT ATTACHMENTS IS 5'-0" C-C.
 - INSTALL CONDUIT SUPPORTS WITHIN 3'-0" OF ALL ENCLOSURES AND CONDUIT TERMINATIONS.
 - GROUND ALL RIGID METALLIC CONDUIT (RMC) HANGERS PER MANUFACTURER RECOMMENDATIONS WHEN ELECTRICAL CONDUCTORS PRESENT.
 - ENSURE ALL EXPANSION ANCHORS CONFORM TO ASTM A307.
 - ALLOWABLE TYPES OF OUTER DUCT MATERIAL FOR ABOVE GROUND ITS CONDUIT INCLUDE RIGID METALLIC CONDUIT (RMC) AND FIBERGLASS.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW
			CHECKED BY	JLM
			DRAWN BY	ZJ
			CHECKED BY	AJW
			APPROVED BY	NKS
PLOT DATE: 12/22/2022			DATE	12-23-2022

JAMES MERSEREAU - ENGINEER
LICENSE NO. 2021043237

ISSUED FOR BID

DATE: 12-23-2022

HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

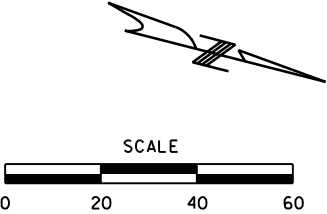
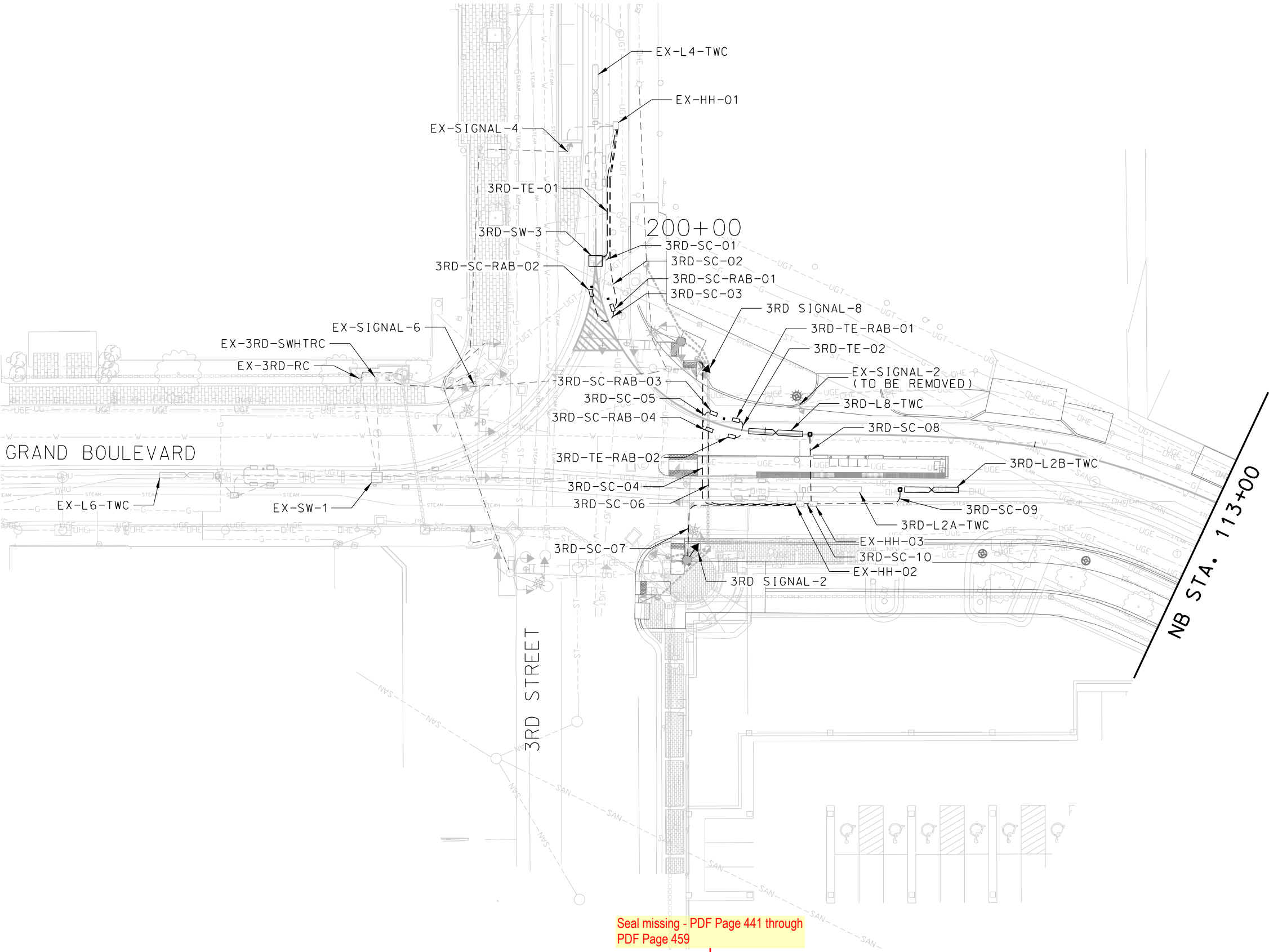
NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

CONDUIT RISER

SCALE FOR 22"x34":
NOT TO SCALE
FILENAME:
2631
CONTRACT NO.:
CONTRACT NO. ***
VOLUME:
DRAWING NO.:
SHEET NO.:
2631 440

EQUIPMENT AND CONDUIT MODIFICATION IDENTIFICATION



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PDF Page 459

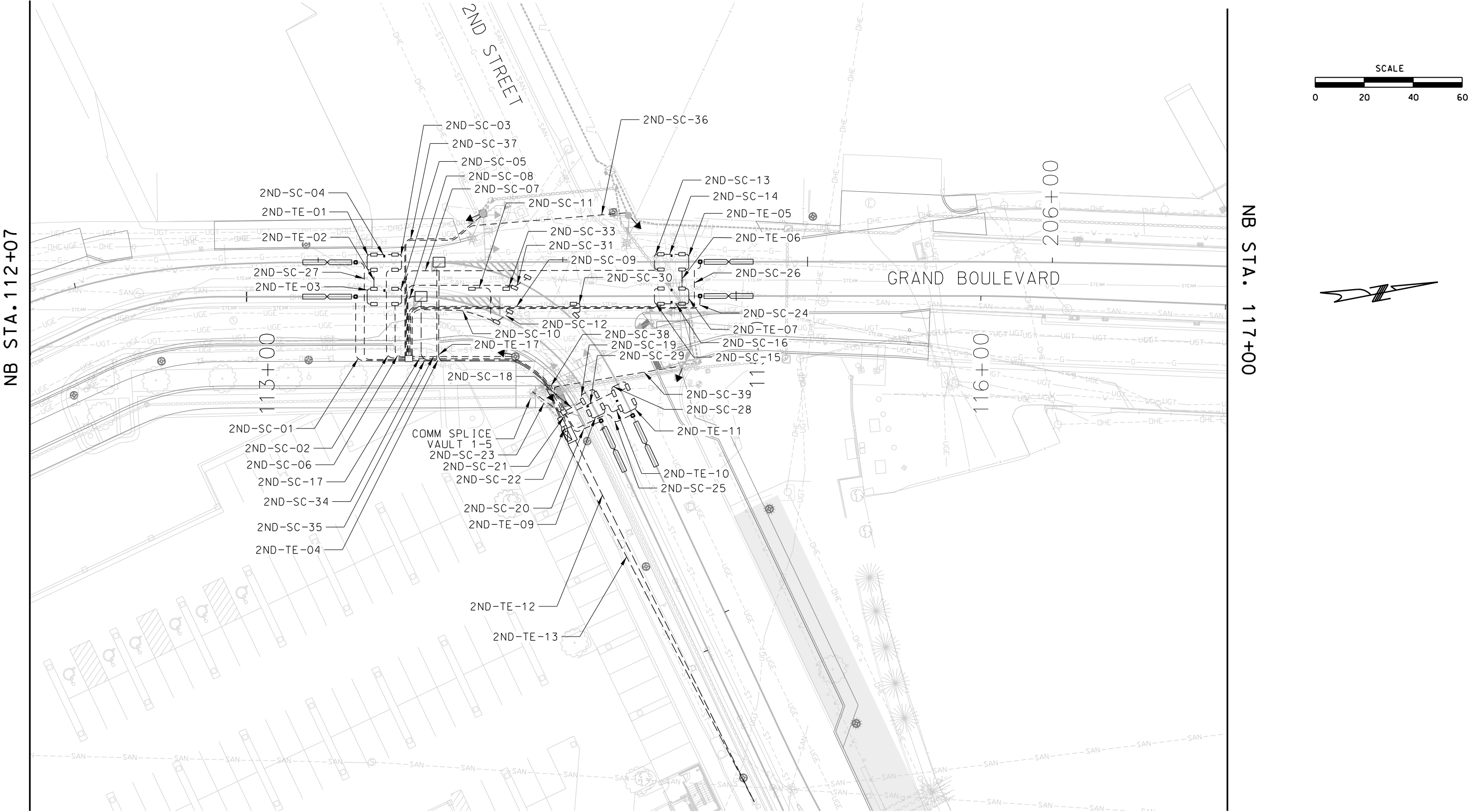
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			CHECKED BY	JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION	TRAIN CONTROL PLAN 3RD & GRAND		FILENAME:	
			DRAWN BY	ZJ						NOI	
			CHECKED BY	AJW						CONTRACT NO.:	
			APPROVED BY	NKS						CONTRACT NO. ***	
PLOT DATE: 12/22/2022		4:32:18 PM	DATE	12-23-2022				DRAWING NO.:	SHEET NO.:	N101	441

EQUIPMENT IDENTIFICATION



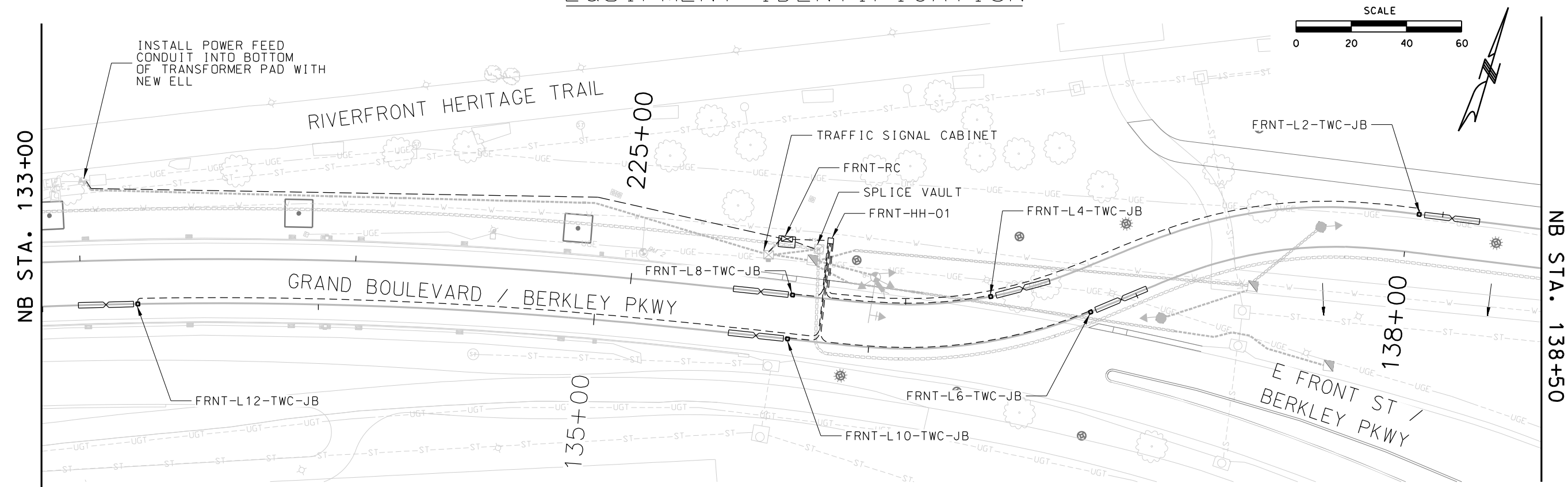
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			CHECKED BY	JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856								
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PLOT DATE: 12/22/2022			4:32:23 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION								

CONDUIT IDENTIFICATION

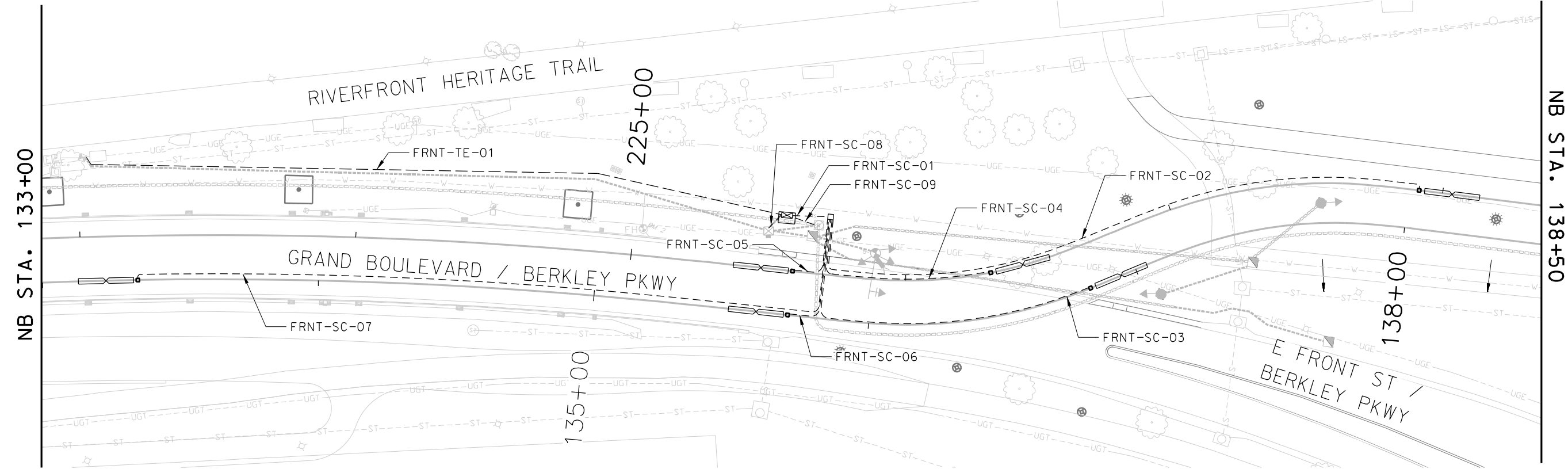


REV	DATE	DESCRIPTION	DESIGNED BY	AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION			TRAIN CONTROL PLAN 2ND & GRAND	
			DRAWN BY	ZJ				CONTRACT NO.: CONTRACT NO. ***			
			CHECKED BY	AJW				VOLUME: I			
			APPROVED BY	NKS				DRAWING NO.: N103	SHEET NO.: 443		
PLOT DATE: 12/22/2022			4:32:27 PM		DATE	12-23-2022					

EQUIPMENT IDENTIFICATION

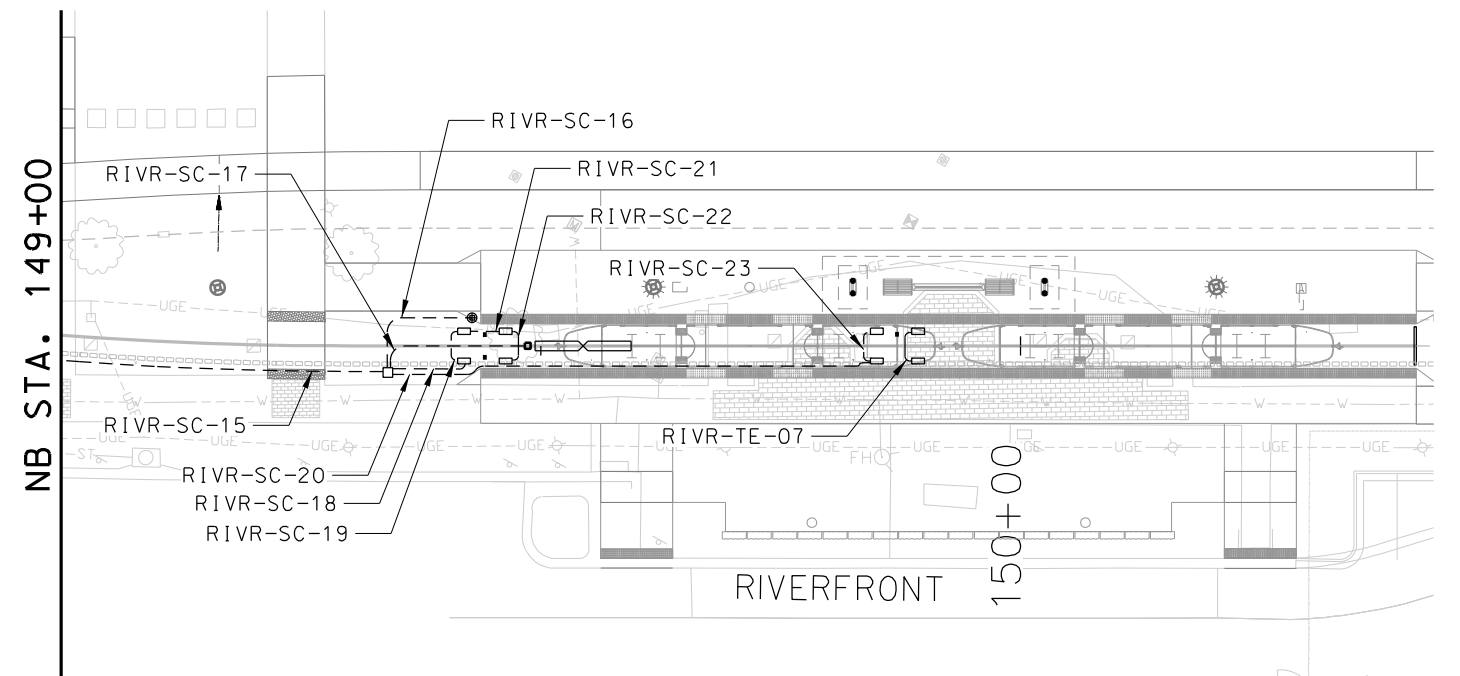
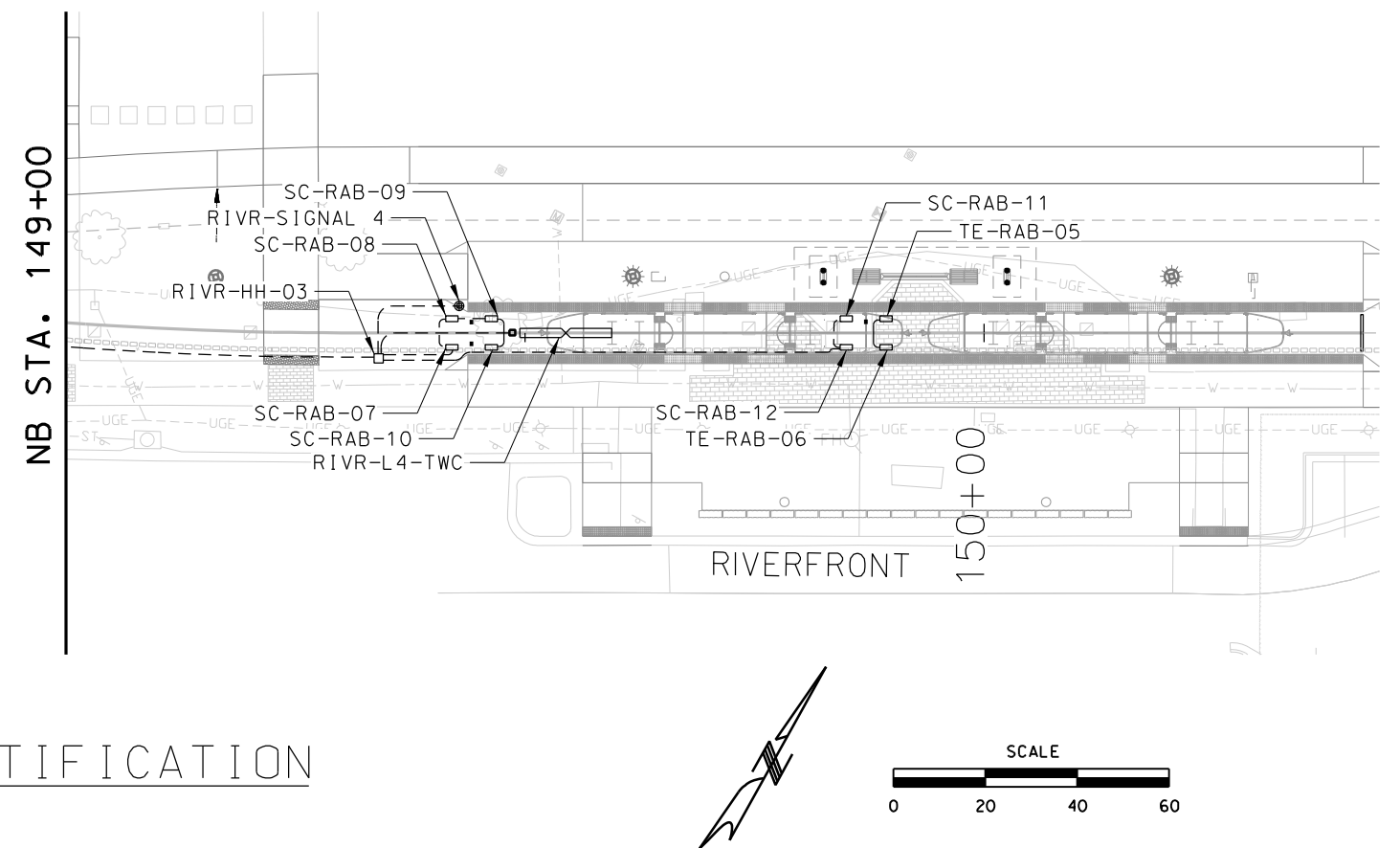


CONDUIT IDENTIFICATION

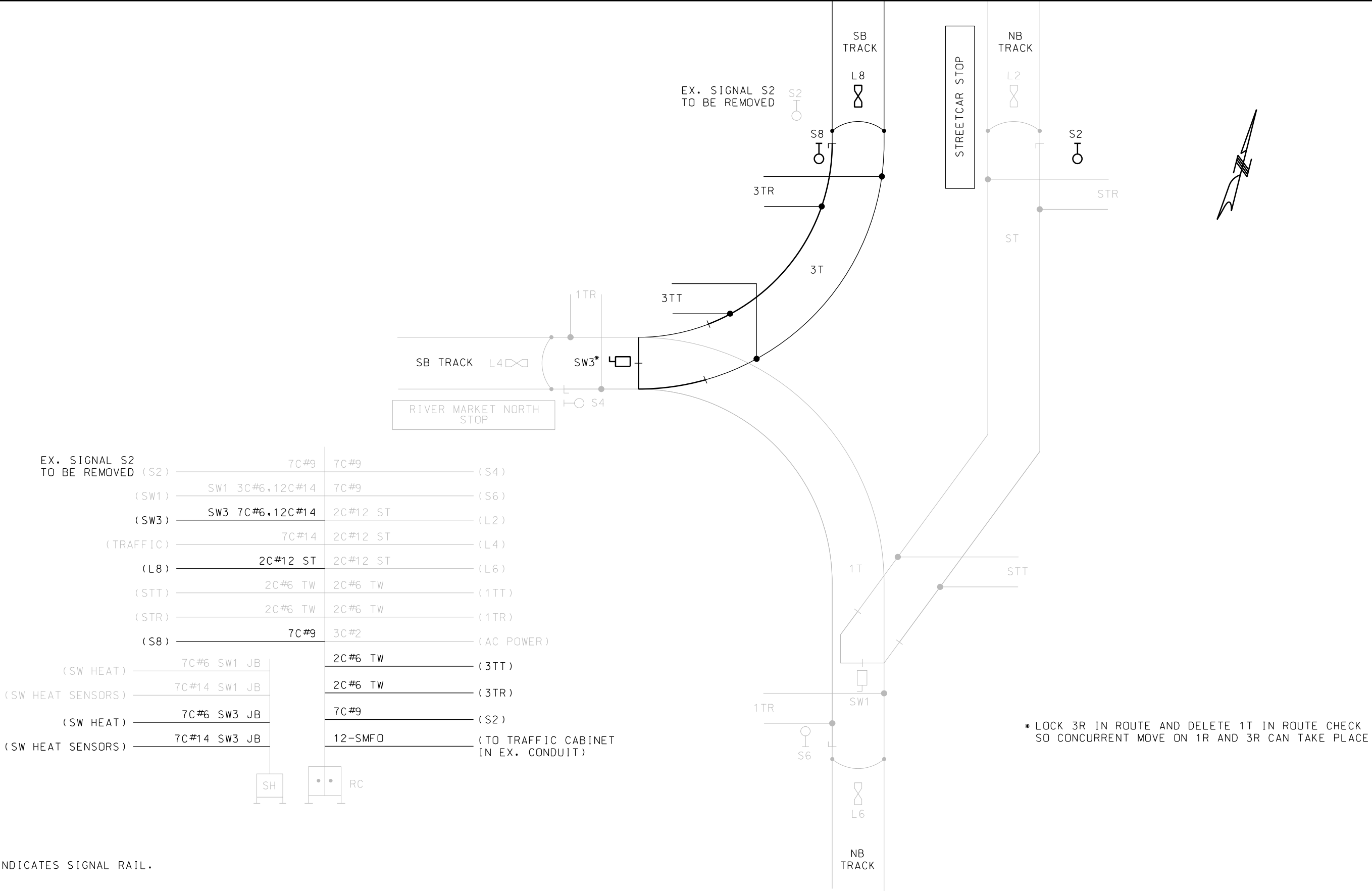


REV	DATE	DESCRIPTION	DESIGNED BY	AJW				ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'		
			CHECKED BY	JLM				 HDR Engineering, Inc., 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	TRAIN CONTROL PLAN FRONT & BERKLEY		FILENAME:		
			DRAWN BY	ZJ							CONTRACT NO.:		
			CHECKED BY	AJW							CONTRACT NO. ***		
			APPROVED BY	NKS							VOLUME:		
PLOT DATE: 12/22/2022			4:32:32 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION			DRAWING NO.:	SHEET NO.:		
										N104	444		

CONDUIT IDENTIFICATION



REV	DATE	DESCRIPTION	DESIGNED BY AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION TRAIN CONTROL PLAN RIVERFRONT	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		FILENAME:	
			DRAWN BY ZJ					CONTRACT NO.:	
			CHECKED BY AJW					CONTRACT NO. ***	
			APPROVED BY NKS					VOLUME:	
								DRAWING NO.:	
PLOT DATE: 12/22/2022		4:32:36 PM	DATE 12-23-2022				N105	445	



EX. SIGNAL S2 TO BE REMOVED (S2)	7C#9	7C#9	(S4)
(SW1)	SW1 3C#6,12C#14	7C#9	(S6)
(SW3)	SW3 7C#6,12C#14	2C#12 ST	(L2)
(TRAFFIC)	7C#14	2C#12 ST	(L4)
(L8)	2C#12 ST	2C#12 ST	(L6)
(STT)	2C#6 TW	2C#6 TW	(1TT)
(STR)	2C#6 TW	2C#6 TW	(1TR)
(S8)	7C#9	3C#2	(AC POWER)
(SW HEAT)	7C#6 SW1 JB	2C#6 TW	(3TT)
(SW HEAT SENSORS)	7C#14 SW1 JB	2C#6 TW	(3TR)
(SW HEAT)	7C#6 SW3 JB	7C#9	(S2)
(SW HEAT SENSORS)	7C#14 SW3 JB	12-SMFO	(TO TRAFFIC CABINET IN EX. CONDUIT)

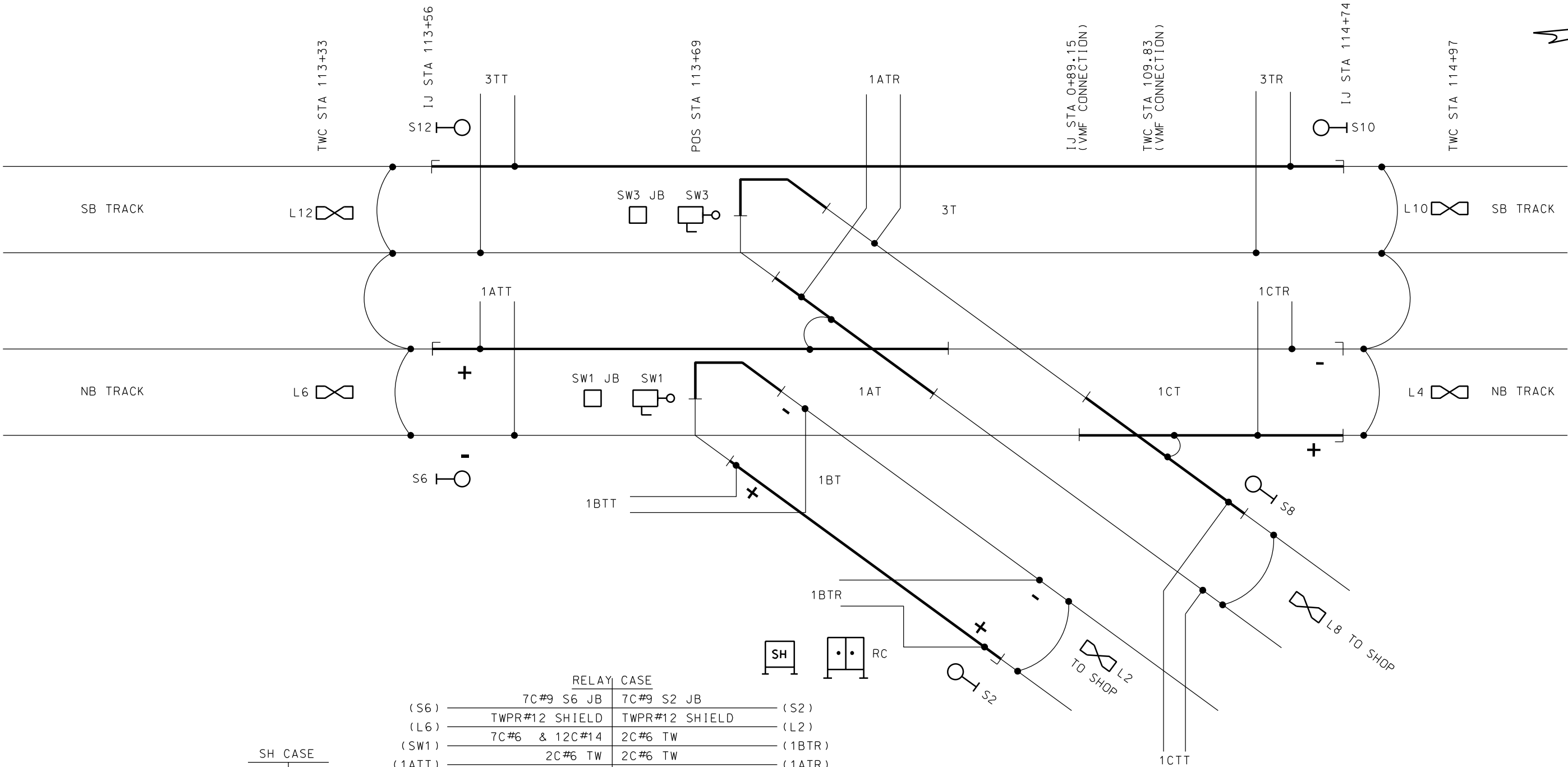
SH

RC

* LOCK 3R IN ROUTE AND DELETE 1T IN ROUTE CHECK
SO CONCURRENT MOVE ON 1R AND 3R CAN TAKE PLACE

NOTES:
1. ——— INDICATES SIGNAL RAIL.

REV	DATE	DESCRIPTION	DESIGNED BY AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856			FILENAME: N600
			DRAWN BY ZJ					CONTRACT NO.: CONTRACT NO. ***
			CHECKED BY AJW					VOLUME: 1
			APPROVED BY NKS					DRAWING NO.: SHEET NO.:
PLOT DATE: 12/22/2022			4:32:40 PM	DATE 12-23-2022	NOT FOR CONSTRUCTION		N600	446



SH CASE	
(SW HEAT)	5-1C#6 2KV SW3 JB
(SW HEAT)	5-1C#6 2KV SW1 JB
(AC POWER)	3C#2 W/ GROUND

RELAY CASE	
(S6)	7C#9 S6 JB
(L6)	TWPR#12 SHIELD
(SW1)	7C#6 & 12C#14
(1ATT)	2C#6 TW
(1BTT)	2C#6 TW
(S12)	7C#9 S12 JB
(SW3)	7C#6 & 12C#14
(L12)	TWPR#12 SHIELD
(3ATT)	2C#6 TW
(S2)	7C#9 S2 JB
(L2)	TWPR#12 SHIELD
(1BTR)	2C#6 TW
(1ATR)	2C#6 TW
(TRAFFIC)	7C#14
(TO SPLICE VAULT SEE COMM. PLANS)	12-SMFO
(AC POWER)	3C#2 W/ GROUND
(S8)	7C#9 S8 JB
(S10)	7C#9 S10 JB
(L4)	TWPR#12 SHIELD
(L8)	TWPR#12 SHIELD
(L10)	TWPR#12 SHIELD
(3ATR)	2C#6 TW
(1CTT)	2C#6 TW
(1CTR)	2C#6 TW

REV	DATE	DESCRIPTION
PLOT DATE: 12/22/2022		4:32:42 PM

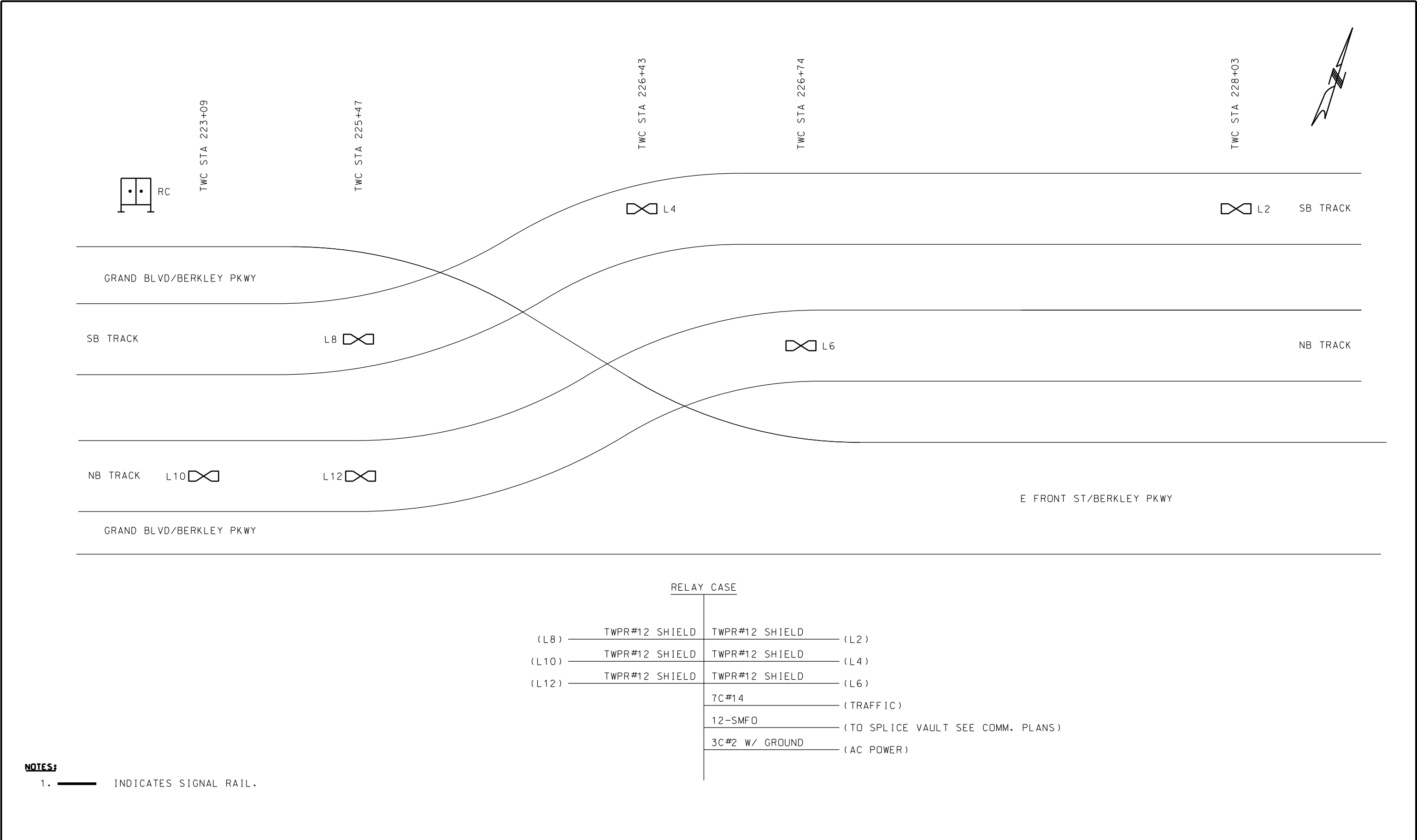
DESIGNED BY	AJW
CHECKED BY	JLM
DRAWN BY	ZJ
CHECKED BY	AJW
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID	DATE: 12-23-2022
 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	
TRAIN CONTROL TRACK AND CABLE PLAN - 2ND & GRAND	

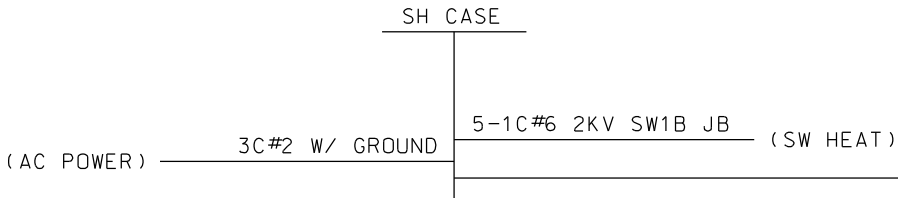
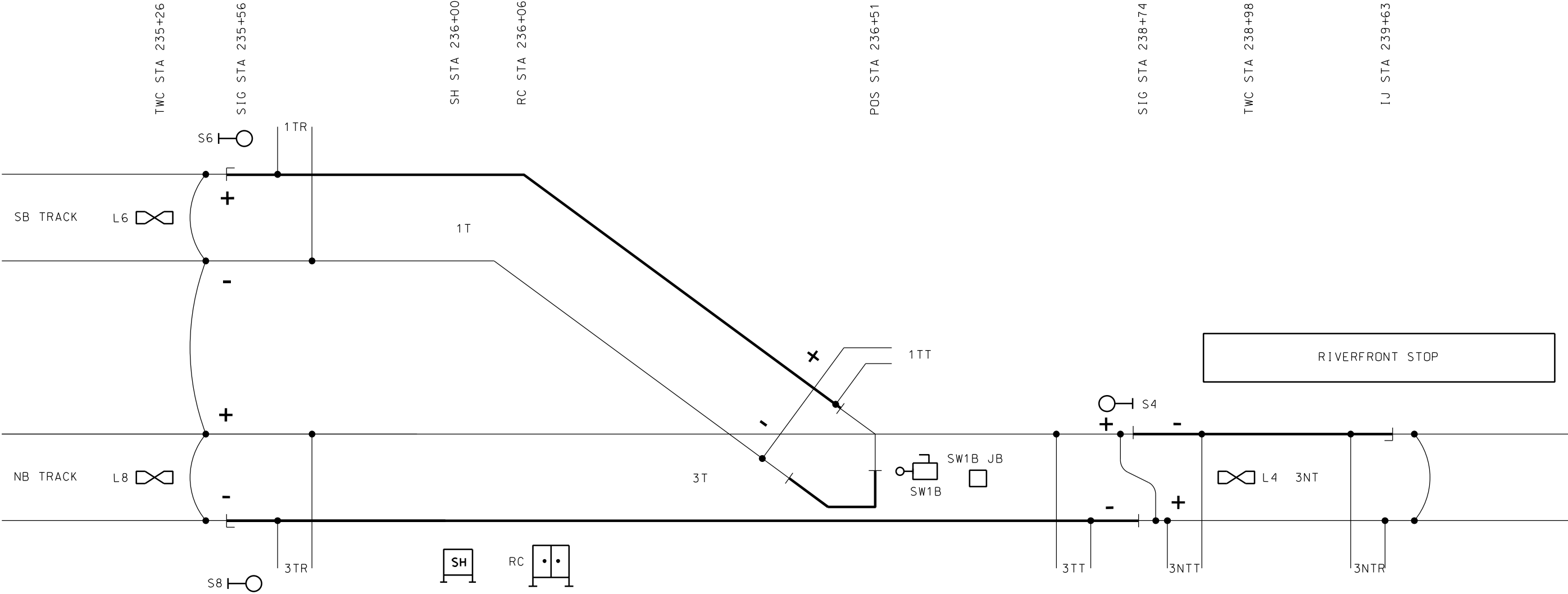
SCALE FOR 22"x34": NOT TO SCALE	
FILENAME: N601	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME: 1	
DRAWING NO.:	SHEET NO.:
N601	447



NOTES:
1.  INDICATES SIGNAL RAIL.

RELAY CASE	
(L8)	TWPR#12 SHIELD
(L10)	TWPR#12 SHIELD
(L12)	TWPR#12 SHIELD
	7C#14 (TRAFFIC)
	12-SMFO (TO SPLICE VAULT SEE COMM. PLANS)
	3C#2 W/ GROUND (AC POWER)

REV		DATE	DESCRIPTION	DESIGNED BY	AJW				ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE				
				CHECKED BY	JLM				 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856						FILENAME:		
				DRAWN BY	ZJ										N602		
				CHECKED BY	AJW				NOT FOR CONSTRUCTION						CONTRACT NO.:		
				APPROVED BY	NKS										CONTRACT NO. ***		
														VOLUME:			
														DRAWING NO.:			
														N602			
														SHEET NO.:			
														448			
PLOT DATE: 12/22/2022			4:32:45 PM	DATE	12-23-2022												

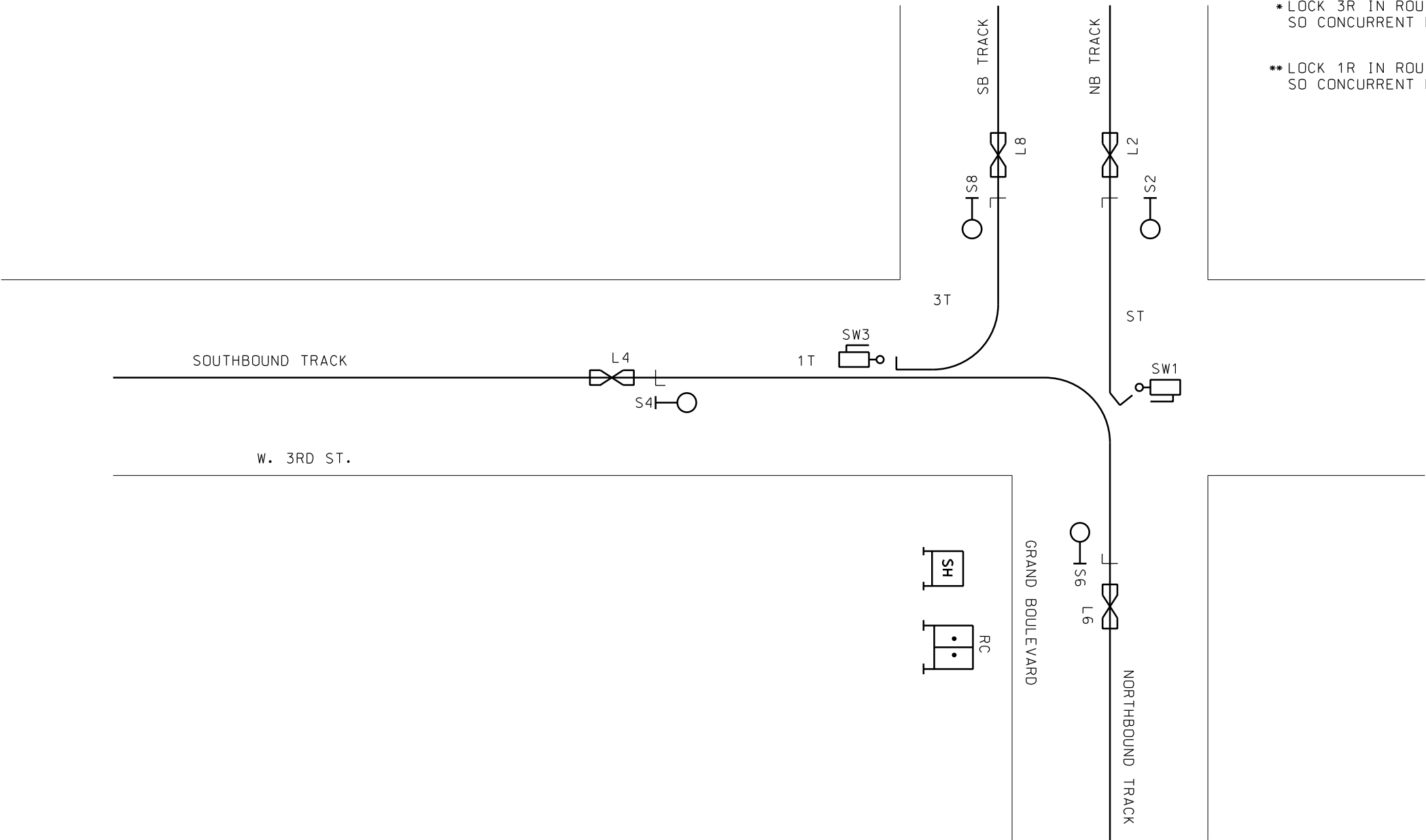


RELAY CASE			
(S6)	7C#9 S6 JB	7C#9 S4 JB	(S4)
(S8)	7C#9 S8 JB	TWPR#12 SHIELD	(L4)
(L6)	TWPR#12 SHIELD	2C#6 TW	(1TT)
(L8)	TWPR#12 SHIELD	2C#6 TW	(3TT)
(1TR)	2C#6 TW	2C#6 TW	(3NTT)
(3TR)	2C#6 TW	2C#6 TW	(3NTR)
		7C#6 & 12C#14	(SW1B)
		12-SMFO	(TO SPLICE VAULT SEE COMM. PLANS)
		3C#2 W/ GROUND	(AC POWER)

NOTES:
1. ——— INDICATES SIGNAL RAIL.

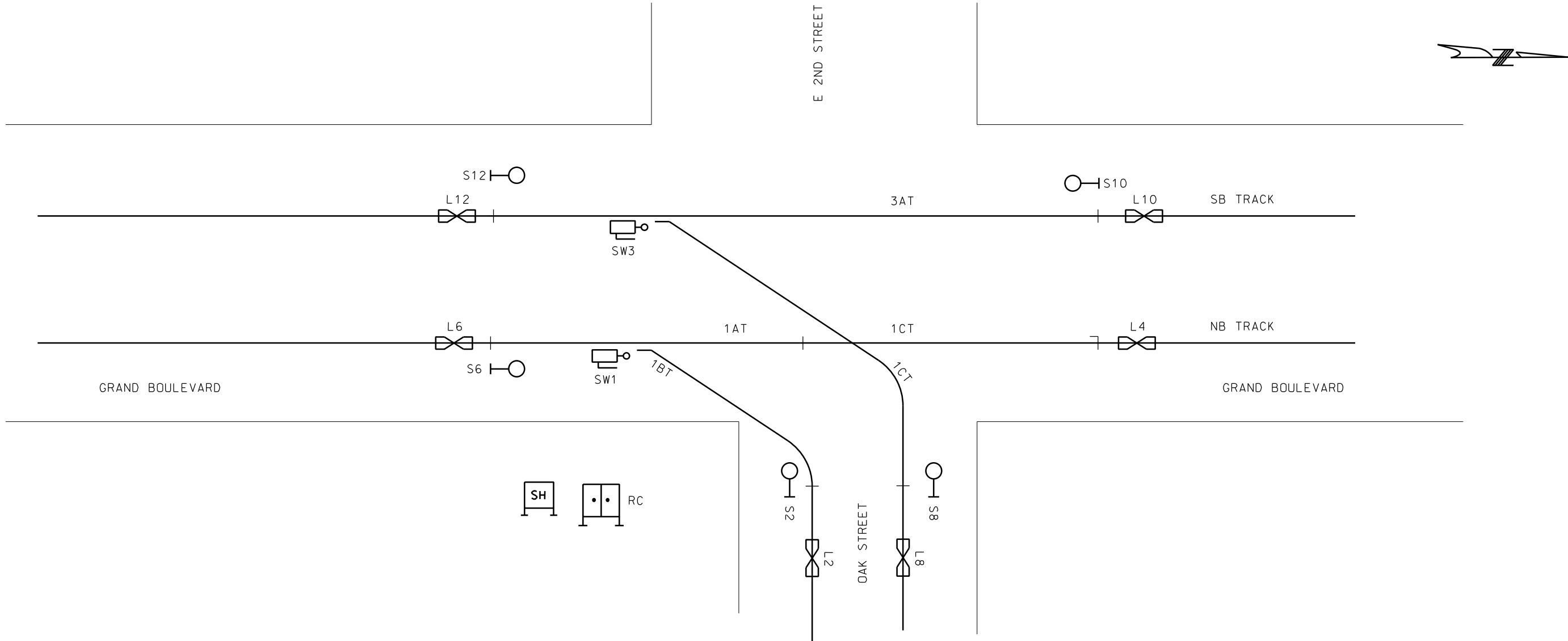
REV			DATE		DESCRIPTION		DESIGNED BY		AJW			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": NOT TO SCALE FILENAME: N603 CONTRACT NO.: CONTRACT NO. *** VOLUME: I DRAWING NO.: SHEET NO.: N603 449	
							CHECKED BY		JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856							
							DRAWN BY		ZJ										
							CHECKED BY		AJW										
							APPROVED BY		NKS										
PLOT DATE: 12/22/2022			4:32:48 PM		DATE		12-23-2022				NOT FOR CONSTRUCTION								

ROUTE	REQUESTS SIGNAL	FLEETED	PREVENTS	APPROACH TRACK	DETECTOR TRACK	SIGNAL ASPECT	APPROACH RELEASE	LOCKING	SWITCH LOCKED	SECTIONAL RELEASE	TWC REQUEST	LCP REQUEST
S2-S6	S2	NO	S4, S6	N/A	1T, ST	LUNAR VERTICAL	N/A	TIME	1R, 3N*	YES	YES	YES
S4-S6	S4	NO	S2, S6, S8	N/A	1T	LUNAR DIAGONAL	N/A	TIME	1N, 3N	YES	YES	YES
S6-S2	S6	YES	S2, S4	N/A	1T, ST	LUNAR VERTICAL	N/A	TIME	1R, 3N*	YES	YES	YES
S6-S4	S6	NO	S2, S4, S8	N/A	1T	LUNAR DIAGONAL	N/A	TIME	1N, 3N	YES	YES	YES
S4-S8	S4	NO	S6, S8	N/A	1T, 3T	LUNAR VERTICAL	N/A	TIME	1N,**3R	YES	YES	YES
S8-S4	S8	YES	S4, S6	N/A	1T, 3T	LUNAR VERTICAL	N/A	TIME	1N,**3R	YES	YES	YES



REV	DATE	DESCRIPTION	DESIGNED BY AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: N604 CONTRACT NO.: CONTRACT NO. *** VOLUME: I DRAWING NO.: SHEET NO.: N604 450		
			CHECKED BY JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856					
			DRAWN BY ZJ								
			CHECKED BY AJW								
			APPROVED BY NKS								
PLOT DATE: 12/22/2022			DATE 12-23-2022			NOT FOR CONSTRUCTION					

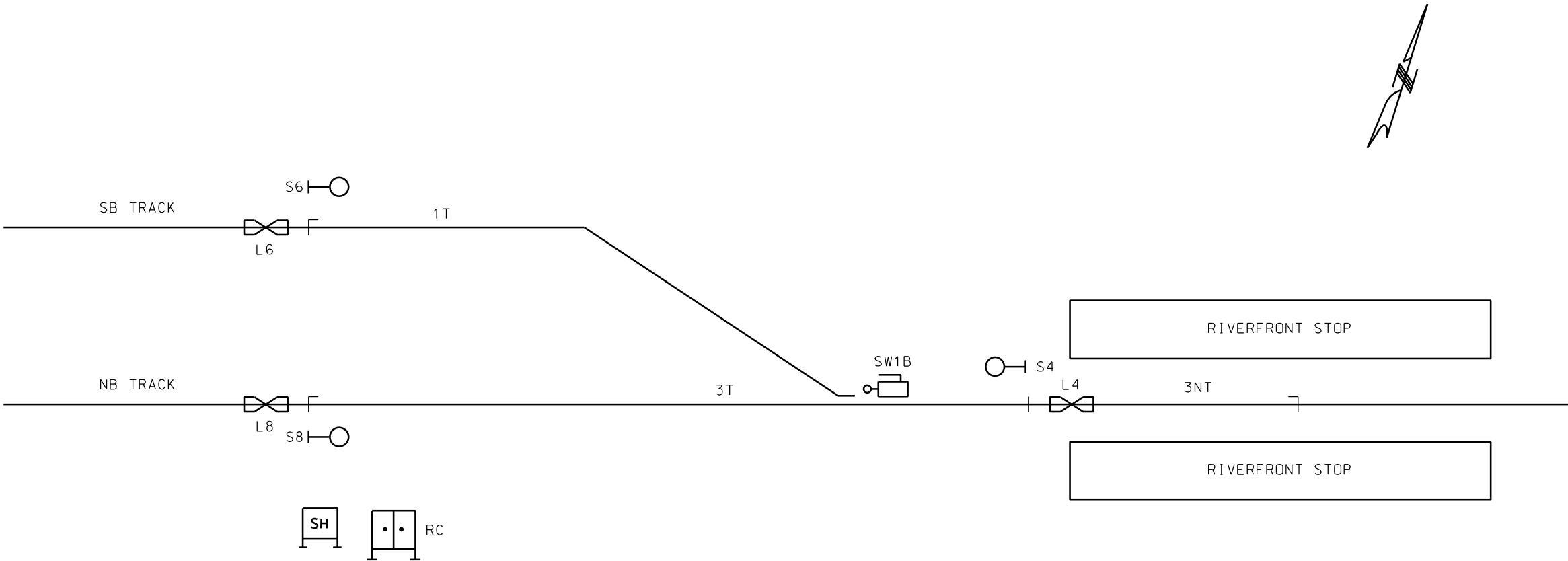
ROUTE	REQUESTS SIGNAL	FLEETED	PREVENTS	APPROACH TRACK	DETECTOR TRACK	SIGNAL ASPECT	APPROACH RELEASE	LOCKING	SWITCH LOCKED	SECTIONAL RELEASE	TWC REQUEST	LCP REQUEST
S10-S12	S10	YES	S12, S8	N/A	3T	LUNAR VERTICAL	N/A	TIME	3N	YES	YES	YES
S12-S10	S12	NO	S10, S8	N/A	3T	LUNAR VERTICAL	N/A	TIME	3N	YES	YES	YES
S12-S8	S12	NO	S10, S8, S6	N/A	3T, 1AT, 1CT	LUNAR DIAGONAL	N/A	TIME	3R - 1R	YES	YES	YES
S6	S6	YES	S2, S8	N/A	1AT, 1BT, 1CT	LUNAR VERTICAL	N/A	TIME	1N - 3N	YES	YES	YES
S6-S2	S6	NO	S2, S8	N/A	1AT, 1BT	LUNAR DIAGONAL	N/A	TIME	1R	YES	YES	YES
S2-S6	S2	NO	S6	N/A	1AT, 1BT	LUNAR VERTICAL	N/A	TIME	1R	YES	YES	YES
S8-S12	S8	NO	S10, S12, S6	N/A	1AT, 1CT, 3T	LUNAR VERTICAL	N/A	TIME	3R - 1R	YES	YES	YES



REV	DATE	DESCRIPTION	DESIGNED BY	AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE FILENAME: N605 CONTRACT NO.: CONTRACT NO. *** VOLUME: DRAWING NO.: SHEET NO.: N605 451		
			CHECKED BY	JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	TRAIN CONTROL ROUTE AND ASPECT CHART - 2ND & GRAND				
			DRAWN BY	ZJ							
			CHECKED BY	AJW							
			APPROVED BY	NKS							
PLOT DATE: 12/22/2022 4:32:53 PM			DATE	12-23-2022	NOT FOR CONSTRUCTION						

ROUTE	REQUESTS SIGNAL	FLEETED	PREVENTS	APPROACH TRACK	DETECTOR TRACK	SIGNAL ASPECT	APPROACH RELEASE	LOCKING	SWITCH LOCKED	SECTIONAL RELEASE	TWC REQUEST	LCP REQUEST
S4-S8	S4	NO	S6, S8	3NT	3T	LUNAR VERTICAL	N/A	TIME	1B	YES	YES	YES
S4-S6	S4	YES	S6, S8	3NT	3T, 1T	LUNAR DIAGONAL	N/A	TIME	1B	YES	YES	YES
S6-S4	S6	NO	S4, S8	N/A	1T, 3T	LUNAR DIAGONAL	N/A	TIME	1B	YES	YES	YES
S8-S4	S8	YES	S4, S6	N/A	3T	LUNAR VERTICAL	N/A	TIME	1B	YES	YES	YES

NOTE: PROPOSED AUTO ROUTING WILL BE FOR NORTHBOUND MOVES. S8 SIGNAL FLEETS TO UNOCCUPIED 3NT WITH 1T/3T UNOCCUPIED. ONCE A TRAIN HAS OCCUPIED 3NT THE ROUTE WILL BE REQUESTED TO EXIT THE SB TRACK AND WHEN TURNOUT IS IN REVERSE POSITION.



REV	DATE	DESCRIPTION	DESIGNED BY	AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":				
			CHECKED BY	JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		NOT TO SCALE				
			DRAWN BY	ZJ					FILENAME:				
			CHECKED BY	AJW					N606				
			APPROVED BY	NKS					CONTRACT NO.:				
PLOT DATE: 12/22/2022			4:32:56 PM			DATE: 12-23-2022			CONTRACT NO. ***				
									VOLUME:				
									I				
									DRAWING NO.:				
									SHEET NO.:				
									N606				
									452				

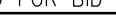
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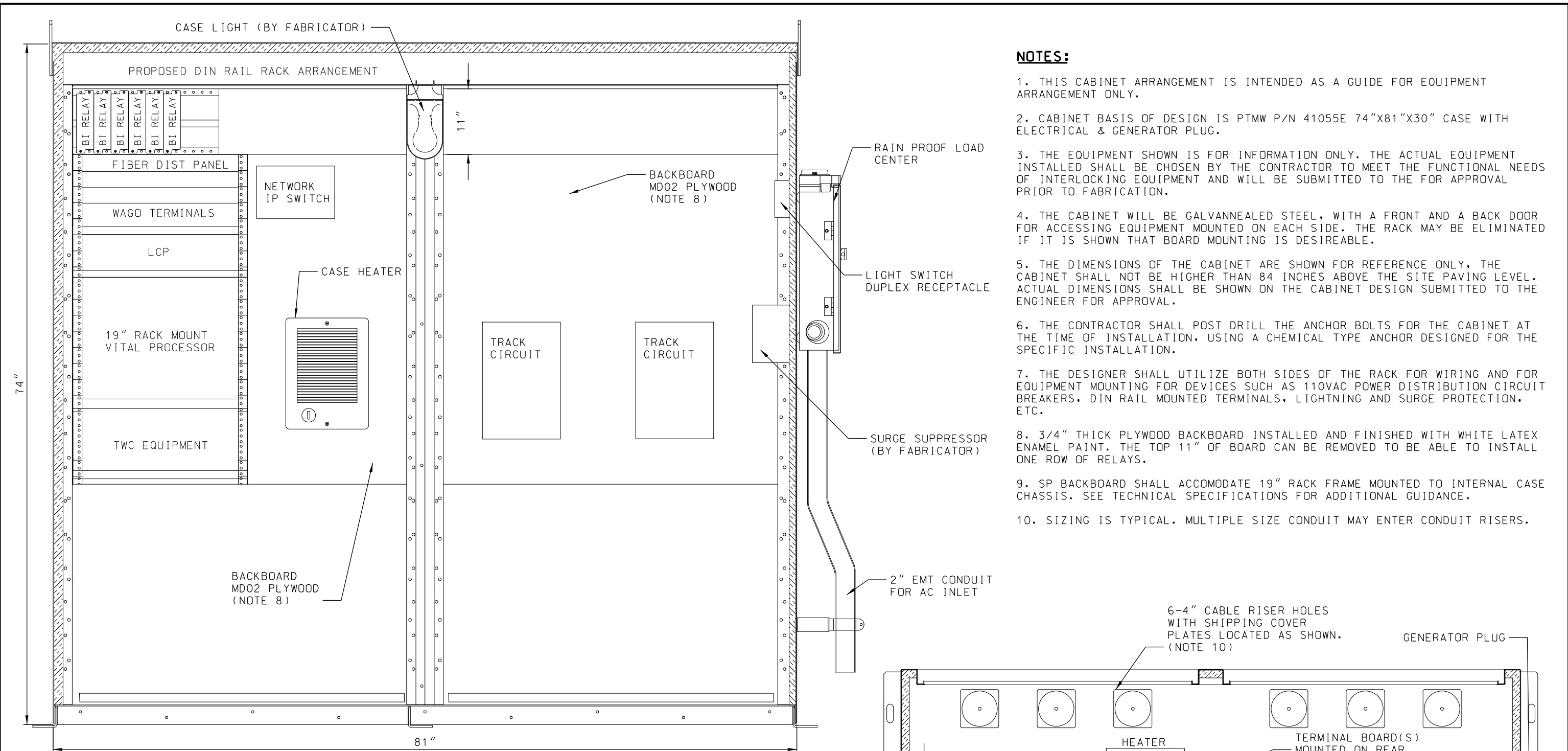
1. JUMPERS NOT REQUIRED IF CONTINUOUS CAST BED PLATE IS USED.
2. SEAL OPENINGS AROUND CONDUITS AND DRAIN PIPES WITH ELASTOMERIC GROUT AT INSULATION LINER.
3. SEE TRACK DRAWINGS FOR ADDITIONAL BATHTUB AND TRACK CONSTRUCTION DETAILS.
4. THE CONTRACTOR SHALL PROVIDE BONDING PLANS FOR EACH SWITCH POINT LOCATION FOR APPROVAL.
5. ARRANGEMENT SHOWN IS GENERAL AND IS PROVIDED TO SHOW TYPICAL ARRANGMENTS OF TRACK CIRCUITS, BONDS AND RETURN RAIL CONFIGURATIONS.
6. ALL 500 KCMIL CABLES ARE ROPELAY
7. CROSS BONDING SHALL NOT BE COMBINED WITH NEGATIVE RETURN AT SUBSTATION.

The diagram illustrates a railway layout with two main tracks: SB TRACK (top) and NB TRACK (bottom). A crossing is located between the tracks, with a crossing loop (1T) and a crossing (3T). The crossing loop is labeled 1T and the crossing is labeled 3T. The diagram includes labels for SB TRACK, NB TRACK, 1T, 3T, and DARK TERRITORY. It also shows various track segments, switches, and signals. Labels A, B, and C are used to identify specific points on the tracks.

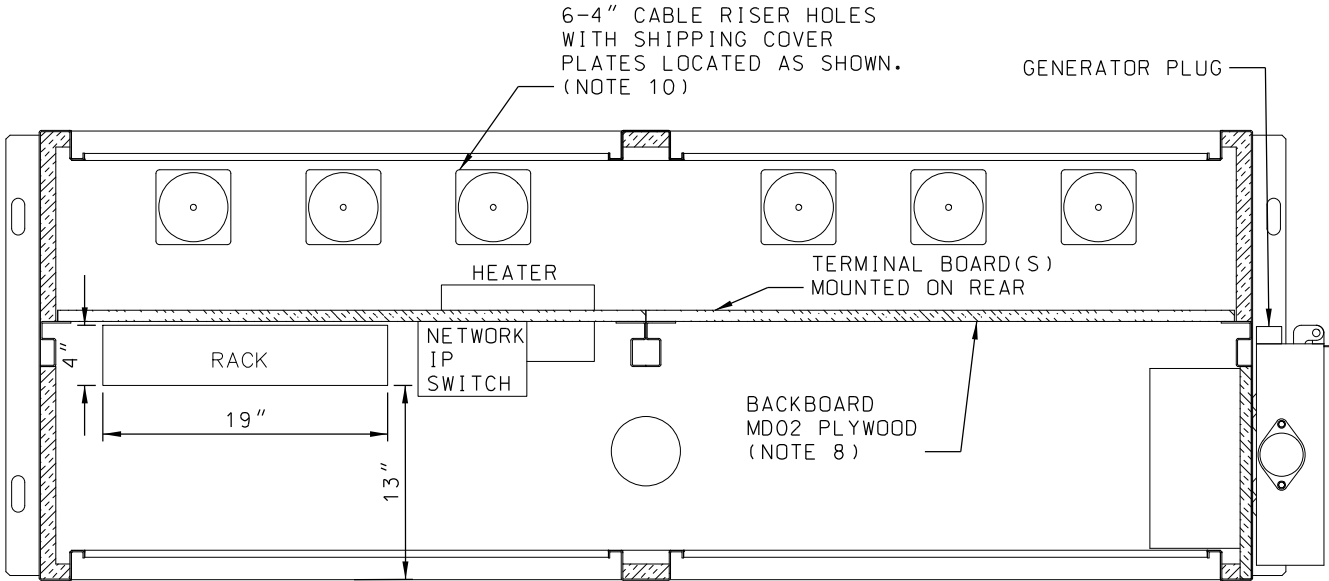
☐ (A) 1-#6 BOND STRAND (TRACK CIRCUIT JUMPER)
☐ (B) 3-500 KCMIL
☐ (C) 2-250 KCMIL
☐ (D) 2-500 KCMIL


 INSULATED JOINT
 SIGNAL RAIL
 NEGATIVE RETURN RAIL

REV	DATE	DESCRIPTION	DESIGNED BY AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION TRAIN CONTROL TURNOUT BONDING	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-380-2700 Certificate of Authority: 000856	FILENAME:		CONTRACT NO.: N607	
			DRAWN BY ZJ			CONTRACT NO. ***			
			CHECKED BY AJW			VOLUME: 1			
			APPROVED BY NKS			DRAWING NO.: N607		SHEET NO.: 453	
PLOT DATE: 12/22/2022		4:32:58 PM	DATE: 12-23-2022		NOT FOR CONSTRUCTION				



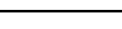
TYPICAL SIGNAL CASE LAYOUT



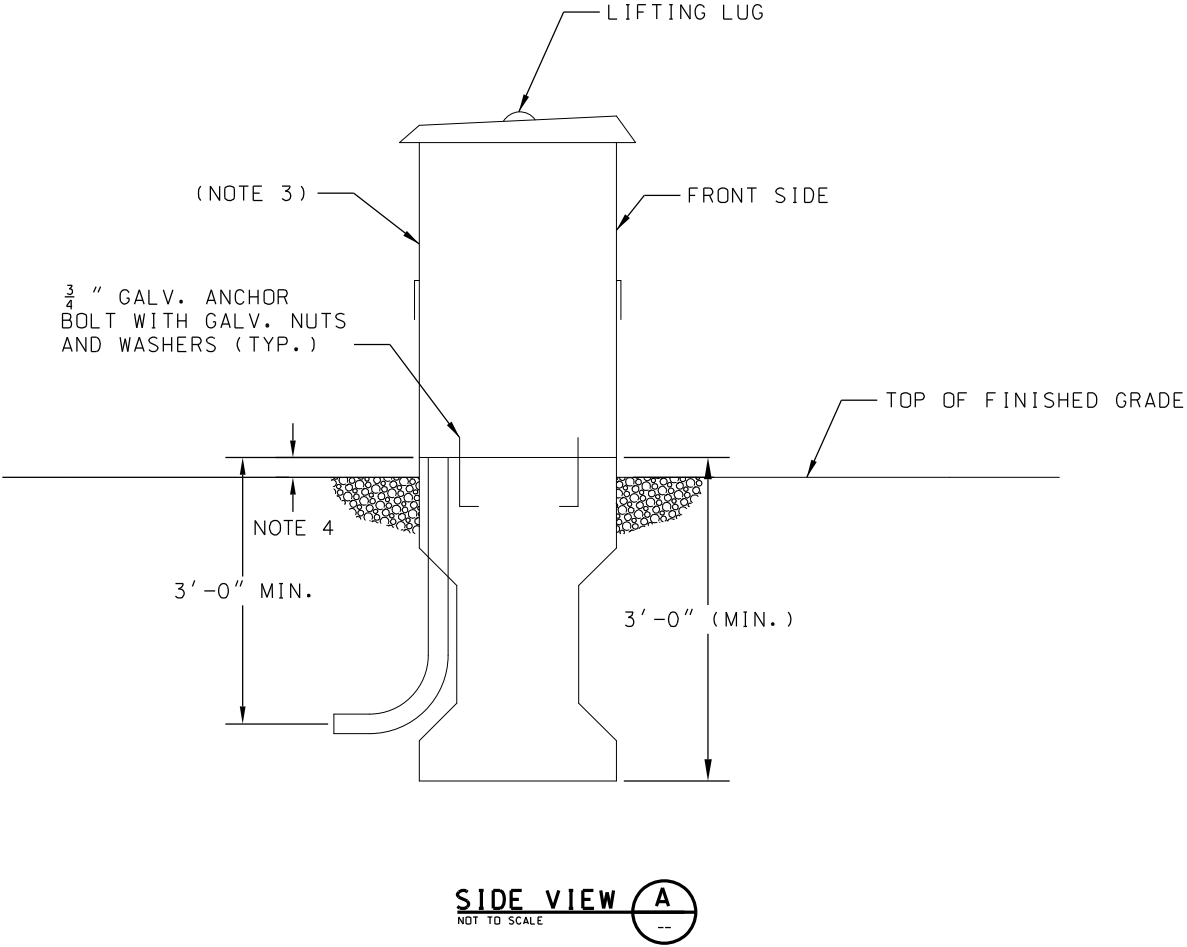
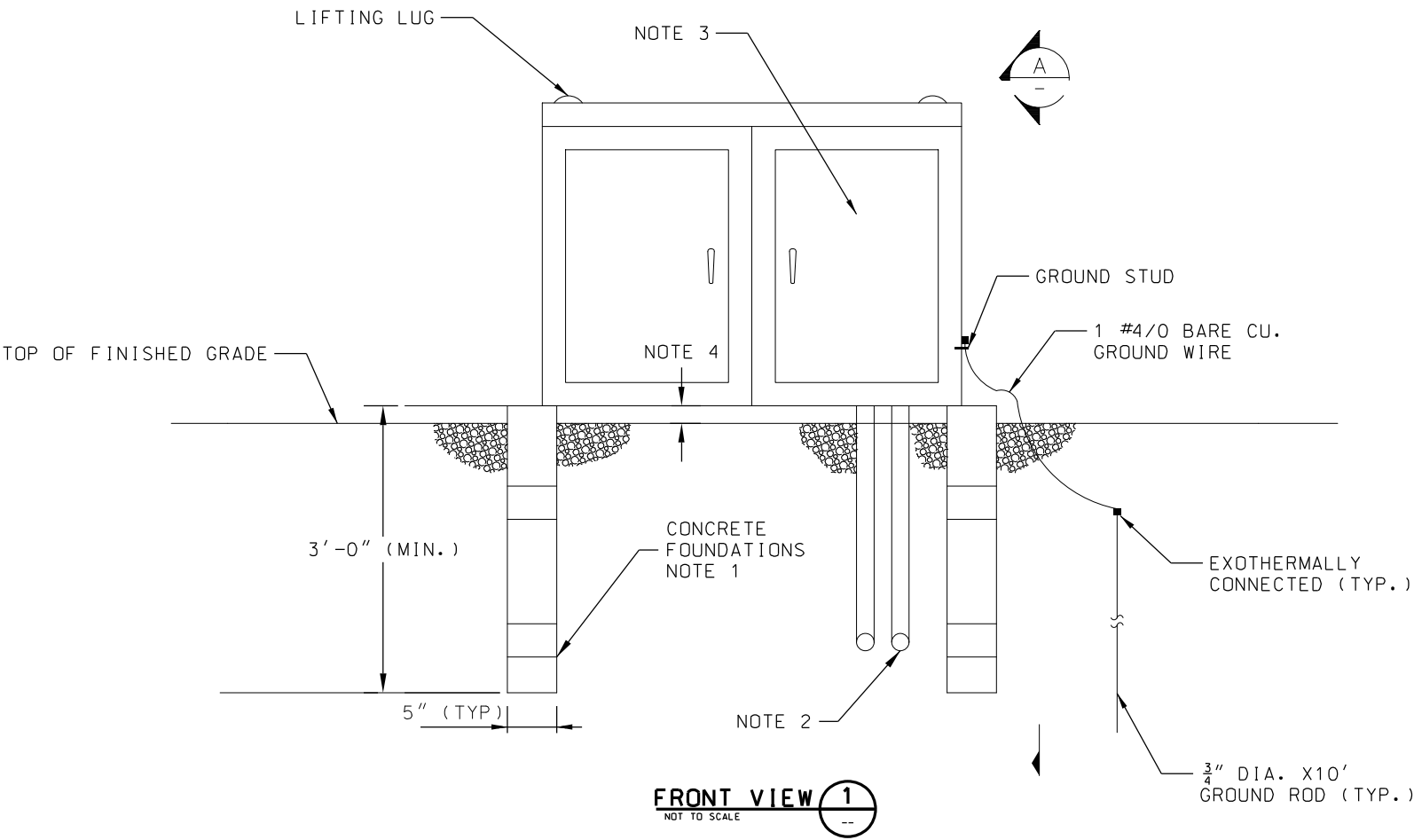
BACK PANEL DIMENSIONS

NOTES:

1. THIS CABINET ARRANGEMENT IS INTENDED AS A GUIDE FOR EQUIPMENT ARRANGEMENT ONLY.
2. CABINET BASIS OF DESIGN IS PTMW P/N 41055E 74"x81"x30" CASE WITH ELECTRICAL & GENERATOR PLUG.
3. THE EQUIPMENT SHOWN IS FOR INFORMATION ONLY. THE ACTUAL EQUIPMENT INSTALLED SHALL BE CHOSEN BY THE CONTRACTOR TO MEET THE FUNCTIONAL NEEDS OF INTERLOCKING EQUIPMENT AND WILL BE SUBMITTED TO THE FOR APPROVAL PRIOR TO FABRICATION.
4. THE CABINET WILL BE GALVANNEALED STEEL, WITH A FRONT AND A BACK DOOR FOR ACCESSING EQUIPMENT MOUNTED ON EACH SIDE. THE RACK MAY BE ELIMINATED IF IT IS SHOWN THAT BOARD MOUNTING IS DESIREABLE.
5. THE DIMENSIONS OF THE CABINET ARE SHOWN FOR REFERENCE ONLY, THE CABINET SHALL NOT BE HIGHER THAN 84 INCHES ABOVE THE SITE PAVING LEVEL. ACTUAL DIMENSIONS SHALL BE SHOWN ON THE CABINET DESIGN SUBMITTED TO THE ENGINEER FOR APPROVAL.
6. THE CONTRACTOR SHALL POST DRILL THE ANCHOR BOLTS FOR THE CABINET AT THE TIME OF INSTALLATION, USING A CHEMICAL TYPE ANCHOR DESIGNED FOR THE SPECIFIC INSTALLATION.
7. THE DESIGNER SHALL UTILIZE BOTH SIDES OF THE RACK FOR WIRING AND FOR EQUIPMENT MOUNTING FOR DEVICES SUCH AS 110VAC POWER DISTRIBUTION CIRCUIT BREAKERS, DIN RAIL MOUNTED TERMINALS, LIGHTNING AND SURGE PROTECTION, ETC.
8. 3/4" THICK PLYWOOD BACKBOARD INSTALLED AND FINISHED WITH WHITE LATEX ENAMEL PAINT. THE TOP 11" OF BOARD CAN BE REMOVED TO BE ABLE TO INSTALL ONE ROW OF RELAYS.
9. SP BACKBOARD SHALL ACCOMODATE 19" RACK FRAME MOUNTED TO INTERNAL CASE CHASSIS. SEE TECHNICAL SPECIFICATIONS FOR ADDITIONAL GUIDANCE.
10. SIZING IS TYPICAL. MULTIPLE SIZE CONDUIT MAY ENTER CONDUIT RISERS.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE
			CHECKED BY	JLM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	TRAIN CONTROL TYPICAL SIGNAL CASE LAYOUT RELAY CASE		FILENAME:
			DRAWN BY	ZJ						N608
			CHECKED BY	AJW						CONTRACT NO.:
			APPROVED BY	NKS						CONTRACT NO. ***
PLOT DATE: 12/22/2022		4:33:01 PM	DATE	12-23-2022			NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:
									N608	454

- NOTES:
- 1. CONTRACTOR SHALL INSTALL PRECAST FOUNDATIONS AS REQUIRED BY FIELD CONSTRAINTS.
 - 2. INSTALL CONDUITS AS REQUIRED. REFER TO SYSTEMWIDE ELECTRICAL PLANS FOR DETAILS.
 - 3. SIZING OF CASE AND FOUNDATION TO BE PROVIDED IN THE FINAL DESIGN.
 - 4. CASE SHALL BE APPROXIMATELY 6" ABOVE FINISHED GRADE.
 - 5. FINISHED GRADE SHALL CONSIST OF PEA GRAVEL APPROXIMATELY 6" DEEP SURROUNDING CASE ON ALL SIDES.



REV	DATE	DESCRIPTION	DESIGNED BY	AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":	
			CHECKED BY	JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	NOT FOR CONSTRUCTION		TRAIN CONTROL TYPICAL SIGNAL CASE FOUNDATION AND GROUNDING DETAILS	NOT TO SCALE
			DRAWN BY	ZJ						FILENAME:
			CHECKED BY	AJW						N609
			APPROVED BY	NKS						CONTRACT NO.:
										CONTRACT NO. ***
PLOT DATE: 12/22/2022			4:33:04 PM			DATE: 12-23-2022			VOLUME:	
									I	
								DRAWING NO.:	SHEET NO.:	
								N609	455	

TRAIN CONTROL CABLE/CONDUIT SCHEDULES																		
CONDUIT ID	FROM	NORTHING	EASTING	TO	NORTHING	EASTING	CONDUIT SIZE (IN.)	QUANTITY	CABLE 1		CABLE 2		CABLE 3		CABLE 4		CABLE 5	
		STATIONING	OFFSET		STATIONING	OFFSET			TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.
3RD-SC-01	EX-HH-01	1071838.102	2765606.567	3RD-SW3-JB	200+02	0.00	4	1	7C#6	1	12C#14	1						
3RD-SC-02	EX-HH-01	1071838.102	2765606.567	3RD-SC-RAB-01	200+21	-3.18	4	1	2C#6 TW	1								
3RD-SC-03	3RD-SC-RAB-01	200+21	-3.18	3RD-SC-RAB-02	200+13	3.11	2	1	BONDSTRAND	1								
3RD-SC-04	EX-HH-02	201+13	25.59	3RD SIGNAL-8	200+65	-17.9	2	1	7C#9	1								
3RD-SC-05	3RD-SC-RAB-03	200+79	-3.15	3RD-SC-RAB-04	200+80	3.15	4	1	2C#6 TW	1								
3RD-SC-06	EX-HH-02	201+13	25.59	3RD-SC-RAB-03	200+79	-3.15	2	1	BONDSTRAND	1								
3RD-SC-07	EX-HH-02	201+13	25.59	3RD SIGNAL-2	200+85	48.17	2	1	7C#9	1								
3RD-SC-08	EX-HH-03	201+18	25.68	3RD-L8-TWC-JB	201+17	0.00	2	1	2C#12 TW	1								
3RD-SC-09	EX-HH-03	201+18	25.68	3RD-L2B-TWC-JB	201+51	20.41	2	1	2C#12 TW	1								
3RD-SC-10	EX-HH-02	201+13	25.59	EX-HH-03	201+18	25.68	4	1	2C#12 TW	2								
3RD-TE-01	EX-HH-01	1071838.102	2765606.567	3RD-SW3-JB	200+02	0.00	2	1	1C#6 2KV	5								
3RD-TE-02	3RD-TE-RAB-01	200+88	-3.15	3RD-TE-RAB-02	200+88	3.15	2-1/2	2	500KCMIL	3								

TRAIN CONTROL CABLE/CONDUIT SCHEDULES																		
CONDUIT ID	FROM	STATIONING	OFFSET	TO	STATIONING	OFFSET	CONDUIT SIZE (IN.)	QUANTITY	CABLE 1		CABLE 2		CABLE 3		CABLE 4		CABLE 5	
									TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.
2ND-SC-01	2ND-HH-01	203+37	39.42	2ND-L6-TWC-JB	203+15	14.00	2	1	2C#12 TW	1								
2ND-SC-02	2ND-HH-01	203+37	39.42	2ND-SC-RAB-02	203+31	3.15	4	1	2C#6 TW	1								
2ND-SC-03	2ND-SC-RAB-01	203+31	-3.15	2ND-SC-RAB-02	203+31	3.15	2	1	BONDSTRAND	1								
2ND-SC-04	2ND-SC-RAB-01	203+31	-3.15	2ND-TE-RAB-01	203+23	-3.15	2	1										
2ND-SC-05	2ND-SC-RAB-03	203+31	10.85	2ND-SC-RAB-04	203+31	17.15	2	1	BONDSTRAND	1								
2ND-SC-06	2ND-HH-01	203+37	39.42	2ND-SC-RAB-04	203+31	17.15	4	1	2C#6 TW	1								
2ND-SC-07	2ND-HH-01	203+37	39.42	2ND-SC-RAB-11	204+40	3.15	4	1	2C#6 TW	1								
2ND-SC-08	2ND-HH-01	203+37	39.42	2ND-SW1-JB	203+42	14.00	4	1	7C#6	1	12C#14	1						
2ND-SC-09	2ND-HH-01	203+37	39.42	2ND-SC-RAB-13	204+40	17.15	4	1	2C#6 TW	1								
2ND-SC-10	2ND-HH-01	203+37	39.42	2ND-SC-RAB-06	203+73	24.45	4	1	2C#6 TW	1								
2ND-SC-11	2ND-SC-RAB-05	203+63	10.96	2ND-SC-RAB-06	203+73	24.45	2	1	BONDSTRAND	1								
2ND-SC-12	2ND-SC-RAB-06	203+73	24.45	2ND-SC-RAB-07	203+78	20.19	2	1	BONDSTRAND	1								
2ND-SC-13	2ND-SC-RAB-10	204+40	-3.15	2ND-SC-RAB-11	204+40	3.15	2	1	BONDSTRAND	1								
2ND-SC-14	2ND-SC-RAB-10	204+40	-3.15	2ND-TE-RAB-05	204+49	-3.15	2	1										
2ND-SC-15	2ND-SC-RAB-12	204+40	10.85	2ND-SC-RAB-13	204+40	17.15	2	1	BONDSTRAND	1								
2ND-SC-16	2ND-SC-RAB-13	204+40	17.15	2ND-TE-RAB-08	204+49	17.15	2	1										
2ND-SC-17	2ND-HH-01	203+37	39.42	2ND-HH-02	204+00	61.35	4	3	7C#6	2	12C#14	2	2C#12 TW	4	2C#6 TW	6	7C#9	3
2ND-SC-18	2ND-HH-02	204+00	61.35	2ND-SC-RAB-15	204+08	56.93	4	1	2C#6 TW	1								
2ND-SC-19	2ND-SC-RAB-14	204+14	54.37	2ND-SC-RAB-15	204+08	56.93	2	1	BONDSTRAND	1								
2ND-SC-20	2ND-HH-02	204+00	61.35	2ND-L2-TWC-JB	204+16	64.92	2	1	2C#12 TW	1								
2ND-SC-21	2ND-HH-02	204+00	61.35	2ND-RC	204+02	71.16	4	4	7C#6	2	12C#14	2	2C#12 TW	6	2C#6 TW	8	7C#9	5
2ND-SC-21	2ND-HH-02	204+00	61.35	2ND-RC	204+02	71.16	SEE ABOVE	SEE ABOVE	7C#14	1								
2ND-SC-22	2ND-RC	204+02	71.16	2ND-SWHTRC	204+00	65.49	4	1	7C#14	1								
2ND-SC-23	2ND-HH-02	204+00	61.35	SPLICE VAULT	203+87	54.91	2	1	12SMFO	1								
2ND-SC-24	2ND-HH-01	203+37	39.42	2ND-L4-TWC-JB	204+56	14.00	2	1	2C#12 TW	1								
2ND-SC-25	2ND-HH-02	204+00	61.35	2ND-L8-TWC-JB	204+28	62.80	2	1	2C#12 TW	1								
2ND-SC-26	2ND-HH-01	203+37	39.42	2ND-L10-TWC-JB	204+56	0.00	2	1	2C#12 TW	1								
2ND-SC-27	2ND-HH-01	203+37	39.42	2ND-L12-TWC-JB	203+15	0.00	2	1	2C#12 TW	1								
2ND-SC-28	2ND-SC-RAB-16	204+21	53.85	2ND-SC-RAB-17	204+26	51.22	2	1	BONDSTRAND	1								
2ND-SC-29	2ND-HH-02	204+00	61.35	2ND-SC-RAB-16	204+21	53.85	4	1	2C#6 TW	1								
2ND-SC-30	2ND-SC-RAB-09	204+04	17.2	2ND-SC-RAB-20	204+05	21.83	2	1	BONDSTRAND	1								
2ND-SC-31	2ND-SC-RAB-18	203+86	6.25	2ND-SC-RAB-19	203+80	10.50	2	1	BONDSTRAND	1								
2ND-SC-32	2ND-HH-01	203+37	39.42	2ND-SC-RAB-19	203+80	10.50	4	1	2C#6 TW	1								
2ND-SC-33	2ND-SC-RAB-08	203+77	10.91	2ND-SC-RAB-19	203+80	10.50	2	1	BONDSTRAND	1								
2ND-SC-36	2ND-HH-01	203+37	39.42	2ND-SIGNAL 10	204+27	-18.95	2	1	7C#9	1								
2ND-SC-37	2ND-HH-01	203+37	39.42	2ND-SIGNAL 12	203+67	-19.85	2	1	7C#9	1								
2ND-SC-38	2ND-HH-02	204+00	61.35	2ND-SIGNAL 2	203+92	50.42	2	1	7C#9	1								
2ND-SC-39	2ND-HH-02	204+00	61.35	2ND-SIGNAL 8	204+49	41.97	2	1	7C#9	1								
2ND-SC-40	2ND-HH-02	204+00	61.35	TRAFFIC HANDHOLE	203+87	52.93	2	1	7C#14	1								

REV	DATE	DESCRIPTION	DESIGNED BY	AJW			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRAIN CONTROL CABLE/CONDUIT SCHEDULE	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLM							FILENAME:	
			DRAWN BY	ZJ							N611	
			CHECKED BY	AJW							CONTRACT NO.:	
			APPROVED BY	NKS							CONTRACT NO. ***	
PLOT DATE: 12/23/2022		3:26:26 PM	DATE	12-23-2022			NOT FOR CONSTRUCTION				DRAWING NO.:	SHEET NO.:
											N611	457

TRAIN CONTROL CABLE/CONDUIT SCHEDULES																		
CONDUIT ID	FROM	STATIONING	OFFSET	TO			CONDUIT SIZE (IN.)	QUANTITY	CABLE 1		CABLE 2		CABLE 3		CABLE 4		CABLE 5	
									TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.
2ND-TE-01	2ND-TE-RAB-01	203+23	-3.15	2ND-TE-RAB-02	203+23	3.15	2-1/2	2	500KCMIL	3								
2ND-TE-02	2ND-TE-RAB-02	203+23	3.15	2ND-TE-RAB-03	203+23	10.85	2-1/2	2	500KCMIL	3								
2ND-TE-03	2ND-TE-RAB-03	203+23	10.85	2ND-TE-RAB-04	203+23	17.15	2-1/2	2	500KCMIL	3								
2ND-TE-04	2ND-SWHTRC	204+00	65.49	2ND-SW1-JB	203+42	14.00	3	1	1C #6 2KV	5								
2ND-TE-05	2ND-TE-RAB-05	204+49	-3.15	2ND-TE-RAB-06	204+49	3.15	2-1/2	2	500KCMIL	3								
2ND-TE-06	2ND-TE-RAB-06	204+49	3.15	2ND-TE-RAB-07	204+49	10.85	2-1/2	2	500KCMIL	3								
2ND-TE-07	2ND-TE-RAB-07	204+49	10.85	2ND-TE-RAB-08	204+49	17.15	2-1/2	2	500KCMIL	3								
2ND-TE-09	2ND-TE-RAB-09	204+16	58.97	2ND-TE-RAB-10	204+11	61.71	2-1/2	2	500KCMIL	3								
2ND-TE-10	2ND-TE-RAB-12	204+23	59.86	2ND-TE-RAB-09	204+16	58.97	2-1/2	2	500KCMIL	3								
2ND-TE-11	2ND-TE-RAB-11	204+29	57.27	2ND-TE-RAB-12	204+23	59.86	2-1/2	2	500KCMIL	3								
2ND-TE-12	POWER SERVICE	204+78	220.74	2ND-RC	204+02	71.16	2	1	3C #2 W/GND	1								
2ND-TE-13	POWER SERVICE	204+78	220.74	2ND-SWHTRC	204+00	65.49	2	1	3C #2 W/GND	1								
2ND-TE-14	2ND-SWHTRC	204+00	65.49	2ND-SW3-JB	203+43	0.00	3	1	1C #6 2KV	5								
TRAIN CONTROL CABLE/CONDUIT SCHEDULES																		
CONDUIT ID	FROM	STATIONING	OFFSET	TO			CONDUIT SIZE (IN.)	QUANTITY	CABLE 1		CABLE 2		CABLE 3		CABLE 4		CABLE 5	
									TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.
FRNT-SC-01	FRNT-RC	225+55	-20.01	FRNT-HH-01	225+70	-21.05	4	2	2C #12 TW	6								
FRNT-SC-02	FRNT-HH-01	225+70	-21.05	FRNT-L2-TWC-JB	227+91	0.00	2	1	2C #12 TW	1								
FRNT-SC-03	FRNT-HH-01	225+70	-21.05	FRNT-L4-TWC-JB	226+31	0.00	2	1	2C #12 TW	1								
FRNT-SC-04	FRNT-HH-01	225+70	-21.05	FRNT-L6-TWC-JB	226+63	15.78	2	1	2C #12 TW	1								
FRNT-SC-05	FRNT-HH-01	225+70	-21.05	FRNT-L8-TWC-JB	225+59	0.00	2	1	2C #12 TW	1								
FRNT-SC-06	FRNT-HH-01	225+70	-21.05	FRNT-L10-TWC-JB	225+59	16.00	2	1	2C #12 TW	1								
FRNT-SC-07	FRNT-HH-01	225+70	-21.05	FRNT-L12-TWC-JB	223+21	16.00	2	1	2C #12 TW	1								
FRNT-SC-08	FRNT-HH-01	225+70	-21.05	TRAFFIC CABINET	225+49	-13.53	2	1	7C #14	1								
FRNT-SC-09	FRNT-HH-01	225+70	-21.05	SPLICE VAULT	225+66	-17.55	2	1	12SMFO	1								
FRNT-TE-01	FRNT-RC	225+55	-20.01	POWER SERVICE	223+02	-18.75	2	1	3C #2 W/GND	1								
TRAIN CONTROL CABLE/CONDUIT SCHEDULES																		
CONDUIT ID	FROM	STATIONING	OFFSET	TO			CONDUIT SIZE (IN.)	QUANTITY	CABLE 1		CABLE 2		CABLE 3		CABLE 4		CABLE 5	
									TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.	TYPE	QTY.
RIVR-SC-01	RIVR-HH-01	235+78	18.6	RIVR-L6-TWC-JB	235+32	0.00	2	1	2C #12 TW	1								
RIVR-SC-02	RIVR-HH-01	235+78	18.6	RIVR-SIGNAL 6	235+51	-8.50	2	1	7C #9	1								
RIVR-SC-03	RIVR-HH-01	235+78	18.6	SC-RAB-01	235+55	3.15	4	1	2C #6 TW	1								
RIVR-SC-04	SC-RAB-01	235+55	3.15	SC-RAB-02	235+55	-3.15	2	1	BONDSTRAND	1								
RIVR-SC-05	SC-RAB-03	235+55	10.85	SC-RAB-04	235+55	17.15	2	1	BONDSTRAND	1								
RIVR-SC-06	RIVR-HH-01	235+78	18.6	RIVR-L8-TWC-JB	235+32	14.00	2	1	2C #12 TW	1								
RIVR-SC-07	RIVR-HH-01	235+78	18.6	SC-RAB-04	235+55	17.15	4	1	2C #6 TW	1								
RIVR-SC-08	RIVR-HH-01	235+78	18.6	RIVR-SIGNAL 8	235+51	25.00	2	1	7C #9	1								
RIVR-SC-09	RIVR-RC	236+08	19.67	RIVR-HH-01	235+78	18.60	4	2	2C #6 TW	2	7C #9	1	2C #12 TW	2				
RIVR-SC-10	RIVR-HH-02	146+65	4.91	SC-RAB-06	236+11	3.15	4	1	2C #6 TW	1								
RIVR-SC-11	SC-RAB-05	236+20	-3.15	SC-RAB-06	236+11	3.15	2	1	BONDSTRAND	1								
RIVR-SC-12	RIVR-RC	236+08	19.67	RIVR-HH-02	146+65	4.91	4	2	2C #6 TW	4	7C #9	1	2C #12 TW	1	7C #6	1	12C #14	1
RIVR-SC-13	RIVR-RC	236+08	19.67	SPLICE VAULT	236+17	24.18	2	1	12SMFO	1								
RIVR-SC-14	RIVR-RC	236+08	19.67	RIVR-SWHTRC	236+02	21.35	4	1	7C #14	1								
RIVR-SC-15	RIVR-HH-02	146+65	4.91	RIVR-HH-03	148+68	5.47	4	2	2C #6 TW	3	7C #9	1	2C #12 TW	1				
RIVR-SC-16	RIVR-HH-03	148+68	5.47	RIVR-SIGNAL 4	148+86	-5.93	2	1	7C #9	1								
RIVR-SC-17	RIVR-HH-03	148+68	5.47	RIVR-L4-TWC-JB	148+97	0.00	2	1	2C #12 TW	1								
RIVR-SC-18	RIVR-HH-03	148+68	5.47	SC-RAB-07	148+84	3.15	4	1	2C #6 TW	2								
RIVR-SC-19	SC-RAB-07	148+84	3.15	SC-RAB-08	148+84	-3.15	2	1	2C #6 TW	1	BONDSTRAND	1						
RIVR-SC-20	RIVR-HH-03	148+68	5.47	SC-RAB-12	149+70	3.15	4	1	2C #6 TW	1								
RIVR-SC-21	SC-RAB-08	148+84	-3.15	SC-RAB-09	148+93	-3.15	2	1	2C #6 TW	1								
RIVR-SC-22	SC-RAB-09	148+93	-3.15	SC-RAB-10	148+93	3.15	2	1	BONDSTRAND	1								
RIVR-SC-23	SC-RAB-11	149+70	-3.15	SC-RAB-12	149+70	3.15	2	1	BONDSTRAND	1								
RIVR-SC-24	RIVR-HH-02	146+65	4.91	RIVR-SW1B-JB	236+46	0.00	4	1	7C #6	1	12C #14	1						
RIVR-TE-01	TE-RAB-01	235+46	-3.15	TE-RAB-02	235+46	3.15	2-1/2	2	500KCMIL	3								
RIVR-TE-02	TE-RAB-02	235+46	3.15	TE-RAB-03	235+46	10.85	2-1/2	2	500KCMIL	3								
RIVR-TE-03	TE-RAB-03	235+46	10.85	TE-RAB-04	235+46	17.15	2-1/2	2	500KCMIL	3								
RIVR-TE-04	RIVR-SWHTRC	236+02	21.35	RIVR-SW1B-JB	236+46	0.00	3	1	1C #6 2KV	5								
RIVR-TE-05	RIVR-SWHTRC	236+02	21.35	POWER SERVICE	235+87	40.60	2	1	3C #2 W/GND	1								
RIVR-TE-06	RIVR-RC	236+08	19.67	POWER SERVICE	235+87	40.60	2	1	3C #2 W/GND	1								
RIVR-TE-07	TE-RAB-05	149+79	-3.15	TE-RAB-06	149+79	3.15	2-1/2	2	500KCMIL	3								

REV	DATE	DESCRIPTION	DESIGNED BY	AJW				ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NOT TO SCALE	
			CHECKED BY	JLM				 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-380-2700 Certificate of Authority: 000856	TRAIN CONTROL CABLE/CONDUIT SCHEDULE		FILENAME:	
			DRAWN BY	ZJ							CONTRACT NO.:	
			CHECKED BY	AJW							CONTRACT NO. ***	
			APPROVED BY	NKS							VOLUME:	
PLOT DATE: 12/23/2022		3:25:53 PM	DATE	12-23-2022			NOT FOR CONSTRUCTION				DRAWING NO.:	SHEET NO.:
											N612	458

TRAIN CONTROL QUANTITIES			
ITEM	UNIT	TOTAL QUANTITY/LENGTH	NOTES
2" PVC CONDUIT TOTAL	LF.	3073	
3" PVC CONDUIT TOTAL	LF.	245	
4" PVC CONDUIT TOTAL	LF.	1671	
2-1/2" PVC CONDUIT TOTAL	LF.	215	
12C#14 SWITCH INDICATION CABLE	LF.	763	
12SMFO CABLE	LF.	0	COVERED IN COMMUNICATIONS QUANTITIES
1C#6 2KV SWITCH HEATER CABLES	LF.	3112	
2C#12 TW ST TWC CABLE	LF.	3404	
2C#6 TW TRACK CIRCUIT CABLE	LF.	3147	
3C#2 W/GND POWER CABLE	LF.	740	
500KCMIL NEGATIVE RETURN CABLE	LF.	1162	
7C#14 SWITCH HEATER CONTROL CABLE	LF.	284	
7C#6 SWITCH MACHINE CONTROL CABLE	LF.	763	
7C#9 SIGNAL CABLE	LF.	1979	
1C#6 BONDSTRAND TRACK CIRCUIT CABLE	LF.	874	
TWC LOOPS AND TWC HANDHOLES	EA.	17	
TWC INTERROGATORS	EA.	3	
SWITCH HEATER CABINETS	EA.	2	
SWITCH HEATER BLOCKOUTS	EA.	6	
RELAY CASE/FOUNDATION	EA.	3	
ELECTRIC SWITCH MACHINES	EA.	4	
GROUND MOUNTED SIGNALS/FOUNDATIONS	EA.	3	
OCS MOUNTED SIGNALS	EA.	4	
RAIL ACCESS BOXES/LIDS	EA.	56	EACH RAIL
TRACK CIRCUITS	EA.	8	
MICROPROCESSORS	EA.	3	
INSULATED JOINTS	EA.	12	EACH RAIL NOT INCLUDING FACTORY MADE SPECIAL TRACKWORK JOINTS
TYPE 8 HANDHOLES	EA.	7	

NOTE: CABLE, CONDUIT, UNITS, AND QUANTITIES ARE ESTIMATES ONLY. CONTRACTOR SHALL VERIFY ACTUAL QUANTITIES AND UNITS.

REV	DATE	DESCRIPTION	DESIGNED BY	AJW		ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	TRAIN CONTROL CABLE/CONDUIT SCHEDULE	SCALE FOR 22"x34": NOT TO SCALE			
			CHECKED BY	JLM		 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				FILENAME: N613			
			DRAWN BY	ZJ						CONTRACT NO.: CONTRACT NO. ***			
			CHECKED BY	AJW						VOLUME: 1			
			APPROVED BY	NKS						DRAWING NO.:	SHEET NO.:		
PLOT DATE: 12/22/2022			4:33:15 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION			N613	459		



REV	DATE	DESCRIPTION
PLOT DATE: 12/23/2022		1:58:42 PM

DESIGNED BY	MMQ
CHECKED BY	JWR
DRAWN BY	MMQ
CHECKED BY	JWR
APPROVED BY	NKS
DATE	12-23-2022

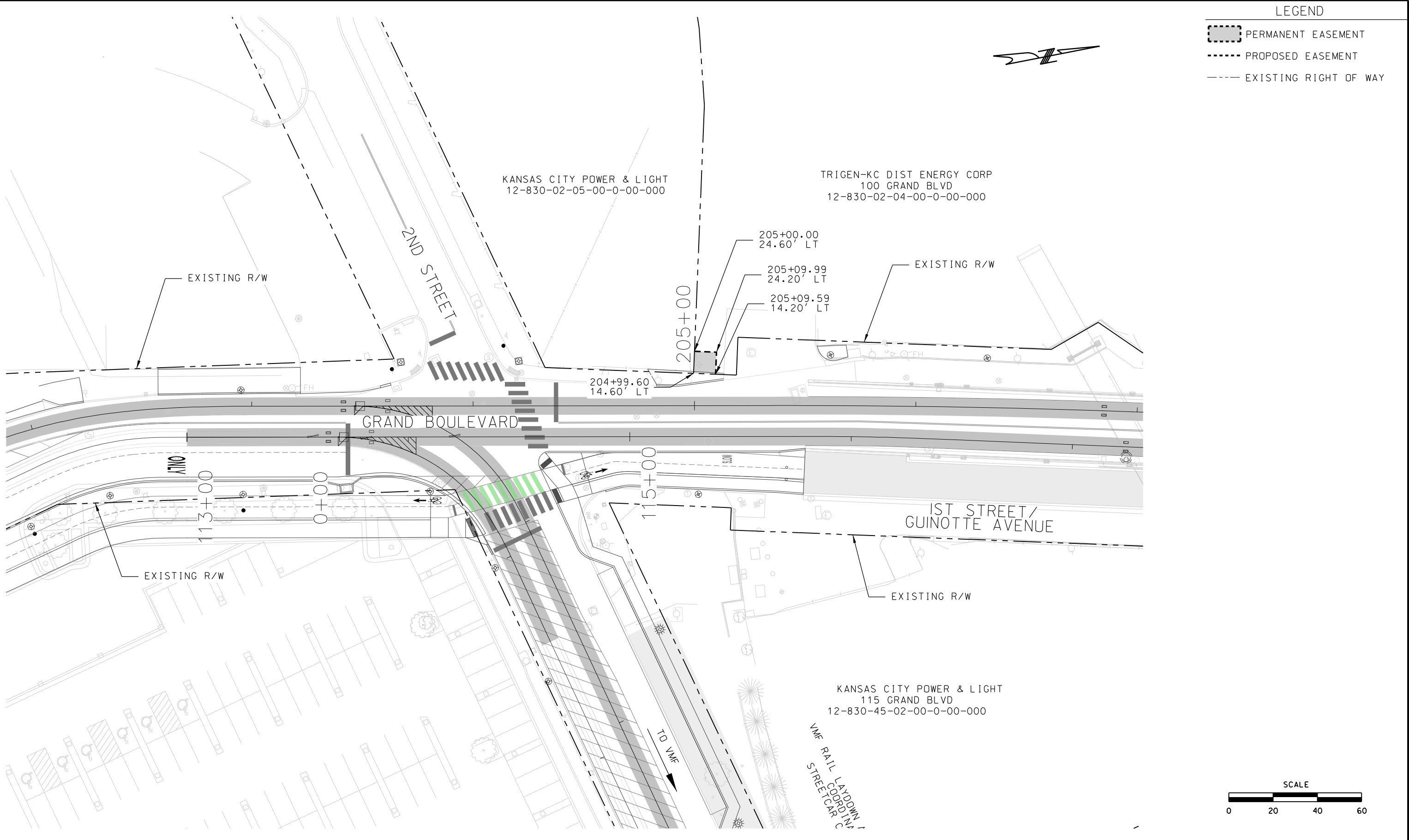


ISSUED FOR BID	DATE: 12-23-2022
HDR HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	
NOT FOR CONSTRUCTION	

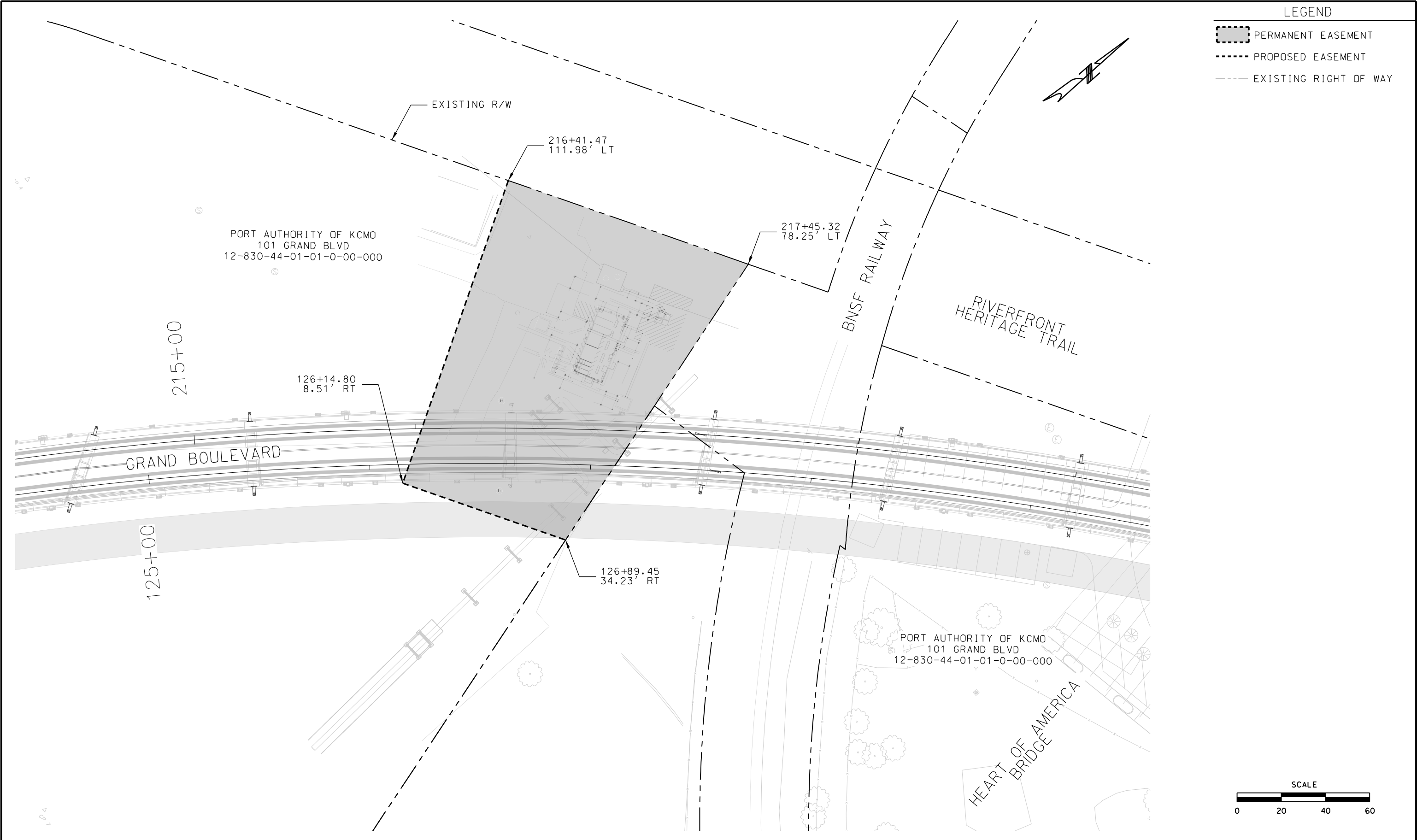
KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

RIGHT OF WAY
KEY MAP

SCALE FOR 22"x34": 1" = 150'	
FILENAME: RW001.dgn	
CONTRACT NO.: CONTRACT NO. ***	
VOLUME:	
DRAWING NO.: RW001	SHEET NO.: 460



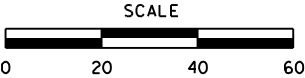
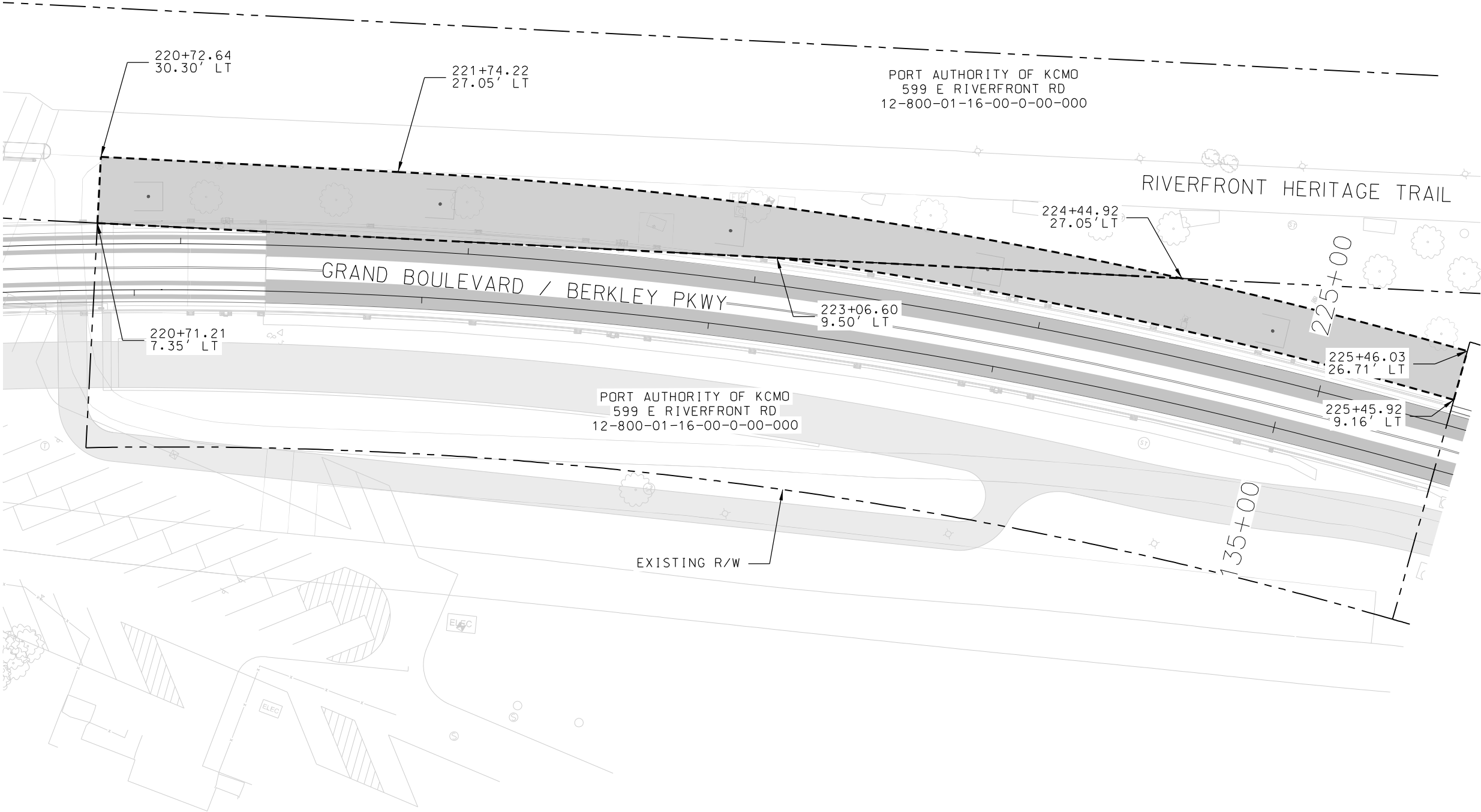
<table><tr><th>REV</th><th>DATE</th><th>DESCRIPTION</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>			REV	DATE	DESCRIPTION																DESIGNED BY JWR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
REV	DATE	DESCRIPTION																											
			CHECKED BY JRY	 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		FILENAME: RW101.dgn																							
			DRAWN BY MMW			CONTRACT NO.: CONTRACT NO. ***																							
			CHECKED BY JWR			VOLUME:																							
			APPROVED BY NKS			DRAWING NO.:																							
PLOT DATE: 12/23/2022			1:58:49 PM	DATE 12-23-2022	NOT FOR CONSTRUCTION		RIGHT OF WAY PLAN 100 GRAND BLVD		SHEET NO.: 461																				



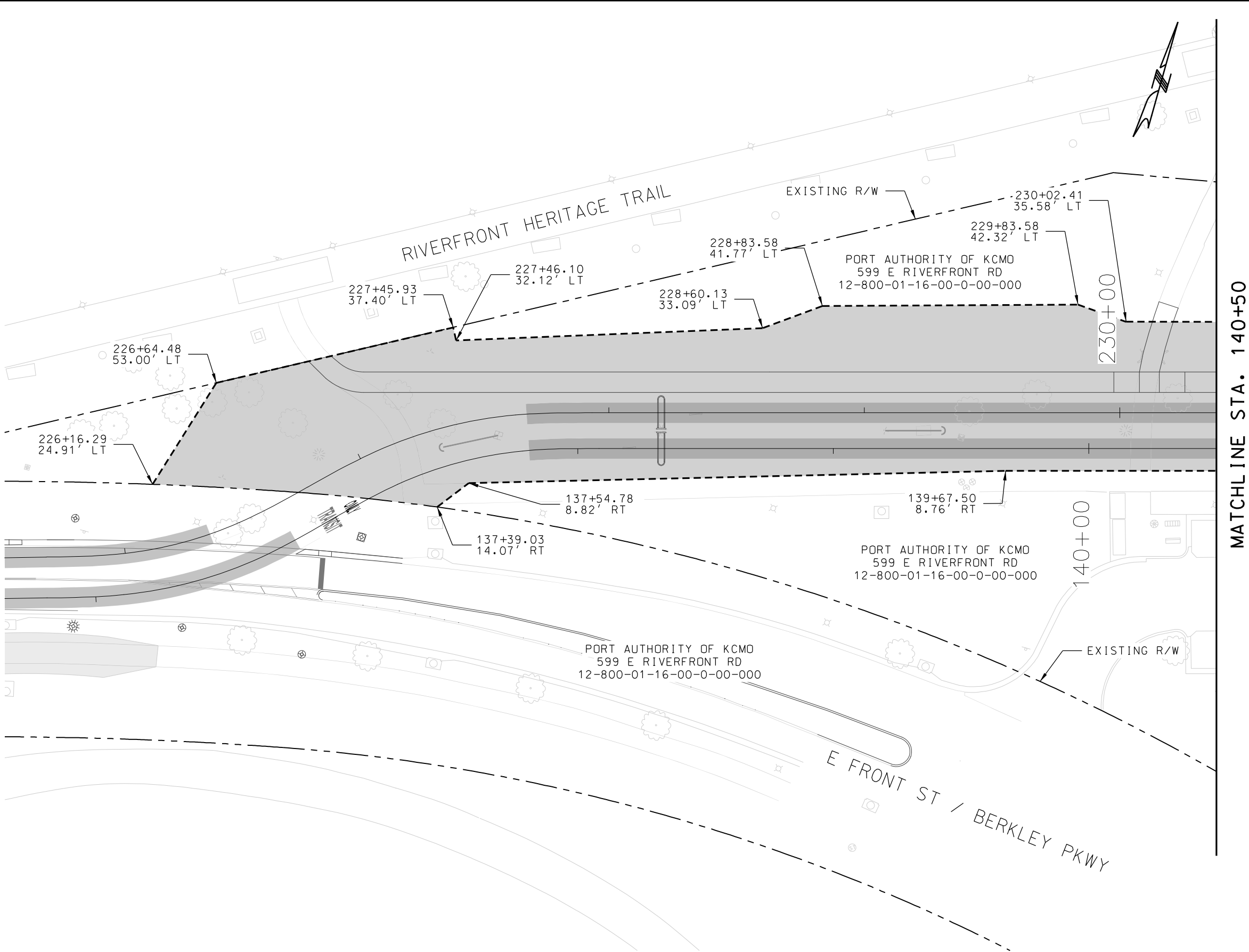
<table><tr><th>REV</th><th>DATE</th><th>DESCRIPTION</th></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></table>			REV	DATE	DESCRIPTION																DESIGNED BY JWR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
REV	DATE	DESCRIPTION																											
			CHECKED BY JRY	RIGHT OF WAY PLAN 101 GRAND BLVD				FILENAME: RW102.dgn																					
			DRAWN BY MMW					CONTRACT NO.:																					
			CHECKED BY JWR					CONTRACT NO. ***																					
			APPROVED BY NKS					VOLUME:																					
			DATE 12-23-2022	NOT FOR CONSTRUCTION					DRAWING NO.:	SHEET NO.:																			
PLOT DATE: 12/23/2022			1:58:51 PM						RW102	462																			

LEGEND

- PERMANENT EASEMENT
- PROPOSED EASEMENT
- EXISTING RIGHT OF WAY



REV			DATE		DESCRIPTION		DESIGNED BY		JWR				ISSUED FOR BID				DATE: 12-23-2022				KANSAS CITY STREETCAR - RIVERFRONT EXTENSION				SCALE FOR 22"x34":			
							CHECKED BY		JRY				 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856												1" = 20'			
							DRAWN BY		MMW																FILENAME:			
							CHECKED BY		JWR																RW103.dgn			
							APPROVED BY		NKS																CONTRACT NO.:			
																	CONTRACT NO. ***											
																	VOLUME:											
																	DRAWING NO.:											
																	SHEET NO.:											
																	RW103											
																	463											

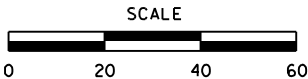


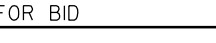
LEGEND

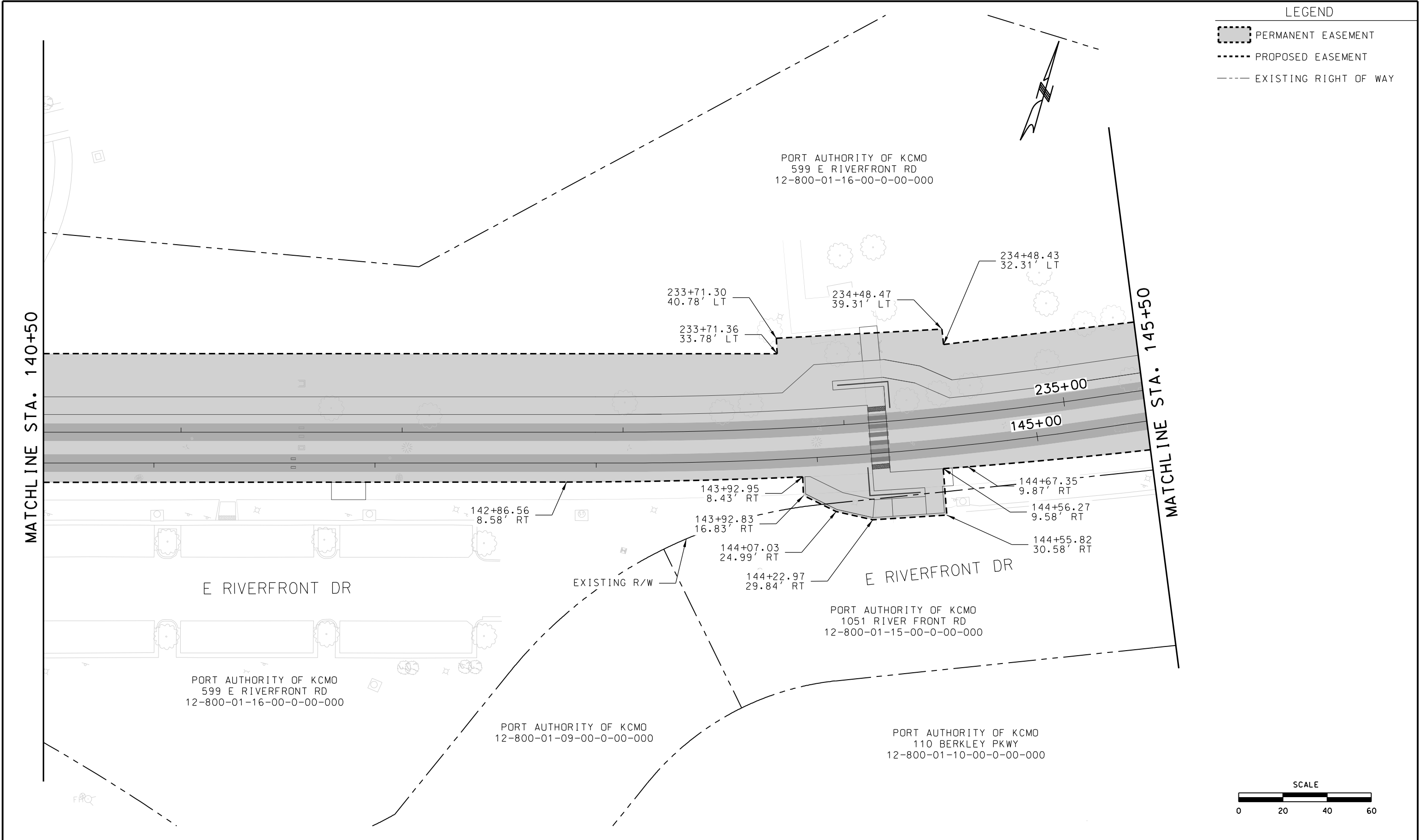
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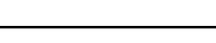
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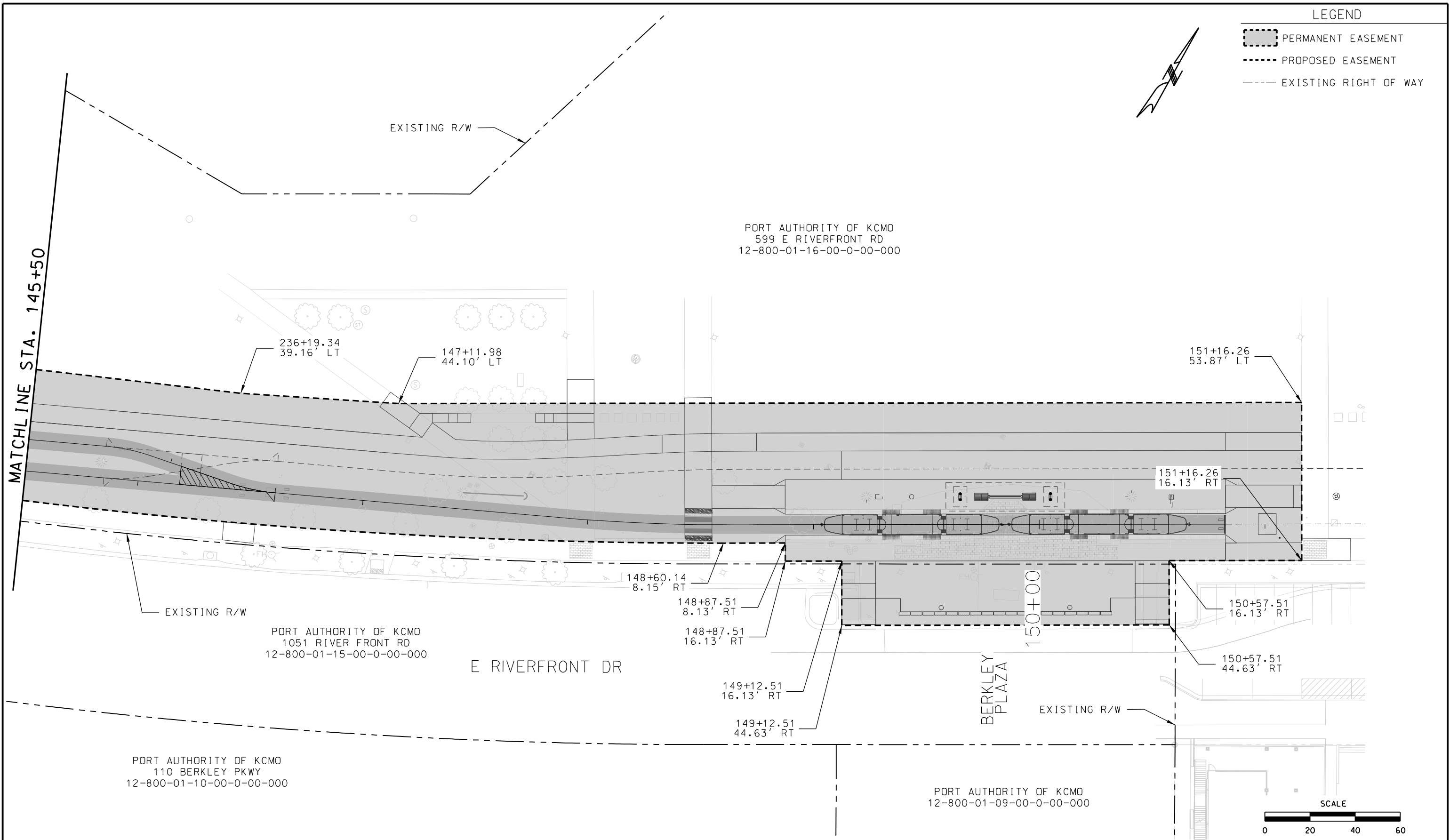
EXISTING RIGHT OF WAY



REV	DATE	DESCRIPTION	DESIGNED BY	JWR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": 1" = 20'	
			CHECKED BY	JRY				HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		RIGHT OF WAY PLAN 599 E RIVERFRONT RD SHEET 2	FILENAME:
			DRAWN BY	MMW							CONTRACT NO.:
			CHECKED BY	JWR							CONTRACT NO. ***
			APPROVED BY	NKS							VOLUME:
PLOT DATE: 12/23/2022			1:58:57 PM		DATE	12-23-2022	NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:	
									RW104	464	



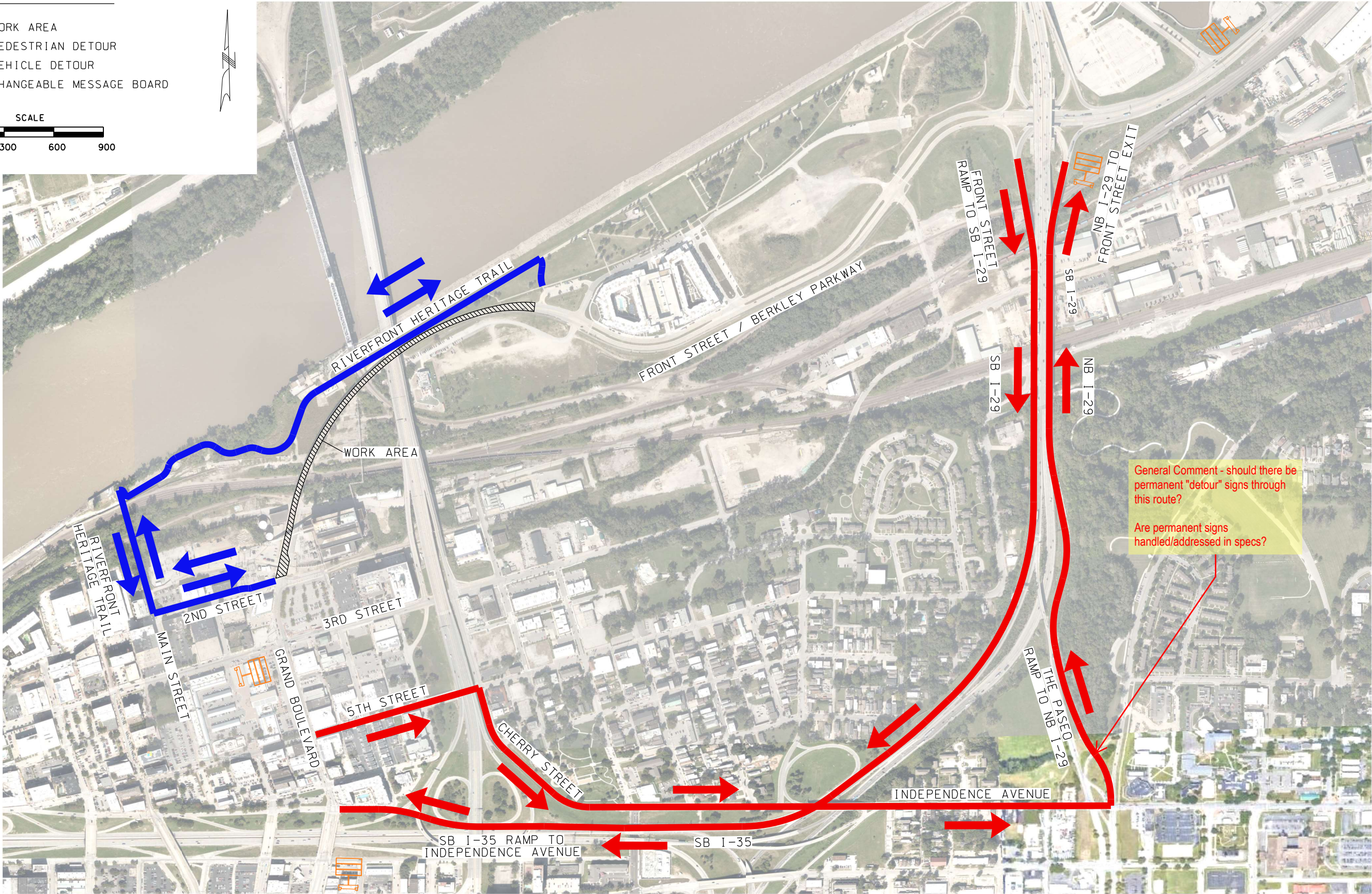
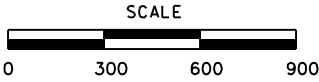
REV		DATE	DESCRIPTION	DESIGNED BY	JWR			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION			SCALE FOR 22"x34": 1" = 20'			
				CHECKED BY	JRY			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856							FILENAME: RW105.dgn			
				DRAWN BY	MMW										CONTRACT NO.: CONTRACT NO. ***			
				CHECKED BY	JWR			NOT FOR CONSTRUCTION							VOLUME:			
				APPROVED BY	NKS										DRAWING NO.: RW105	SHEET NO.: 465		
PLOT DATE: 12/23/2022			1:58:59 PM	DATE	12-23-2022							RIGHT OF WAY PLAN 599 E RIVERFRONT RD SHEET 3						



REV			DATE	DESCRIPTION	DESIGNED BY	JWR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION			SCALE FOR 22"x34": 1" = 20'	
					CHECKED BY	JRY									FILENAME: RW106.dgn	
					DRAWN BY	MMW			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856						CONTRACT NO.: CONTRACT NO. *** VOLUME:	
					CHECKED BY	JWR			NOT FOR CONSTRUCTION						DRAWING NO.:	
					APPROVED BY	NKS									SHEET NO.:	
PLOT DATE: 12/23/2022															RW106	466

LEGEND

- WORK AREA
- PEDESTRIAN DETOUR
- VEHICLE DETOUR
- CHANGEABLE MESSAGE BOARD

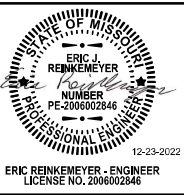


General Comment - should there be permanent "detour" signs through this route?

Are permanent signs handled/addressed in specs?

REV	DATE	DESCRIPTION
PLOT DATE: 12/23/2022		1:22:28 PM

DESIGNED BY	EJR
CHECKED BY	NWH
DRAWN BY	EJR
CHECKED BY	NWH
APPROVED BY	NKS
DATE	12-23-2022



ISSUED FOR BID

DATE: 12-23-2022

HDR
HDR Engineering, Inc.
10450 Holmes Road
Suite 600
Kansas City, MO 64131-3471
816-360-2700
Certificate of Authority: 000856

Consult Inc
HG Consult Inc
7733 N. Wallace Ave.
Kansas City, MO 64158
816-912-4720
Certificate of Authority: 2010005873

NOT FOR CONSTRUCTION

KANSAS CITY STREETCAR - RIVERFRONT EXTENSION

GRAND BOULEVARD BRIDGE
DETOUR ROUTES

SCALE FOR 22"x34": 1" = 300'
FILENAME: Detour Exhibit
CONTRACT NO.: CONTRACT NO. ***
VOLUME: 1
DRAWING NO.: DT101
SHEET NO.: 467

GENERAL NOTES

1. SEE CROSS SECTIONS FOR OFFSET TO NORTHBOUND TRACK CENTERLINE.
2. PROPOSED ELEVATION ALONG ROADWAY CROWN REPRESENT THE FINISHED SURFACE ELEVATIONS.
3. IF SUBSTANDARD PAVEMENT AND/OR SUBGRADE IS FOUND DURING MILLING, CONTRACTOR WILL REPAIR AND RECONSTRUCT THAT SECTION FOR ROADWAY.

MATCHLINE STA. 4+00

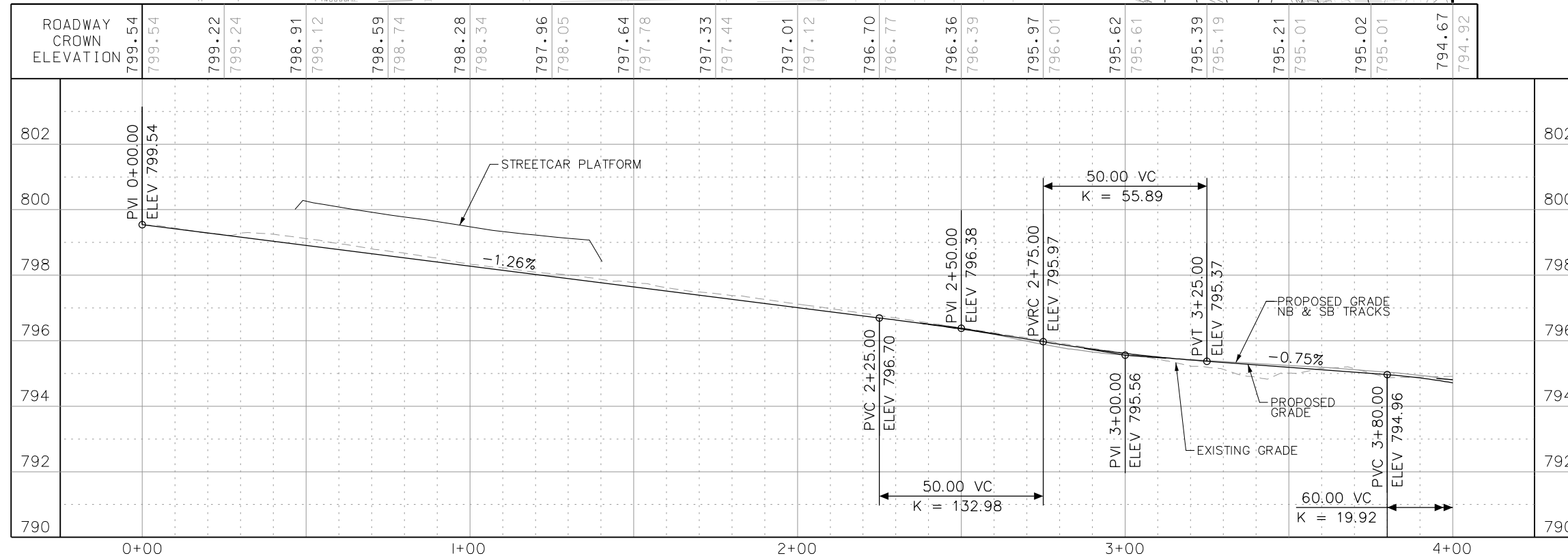
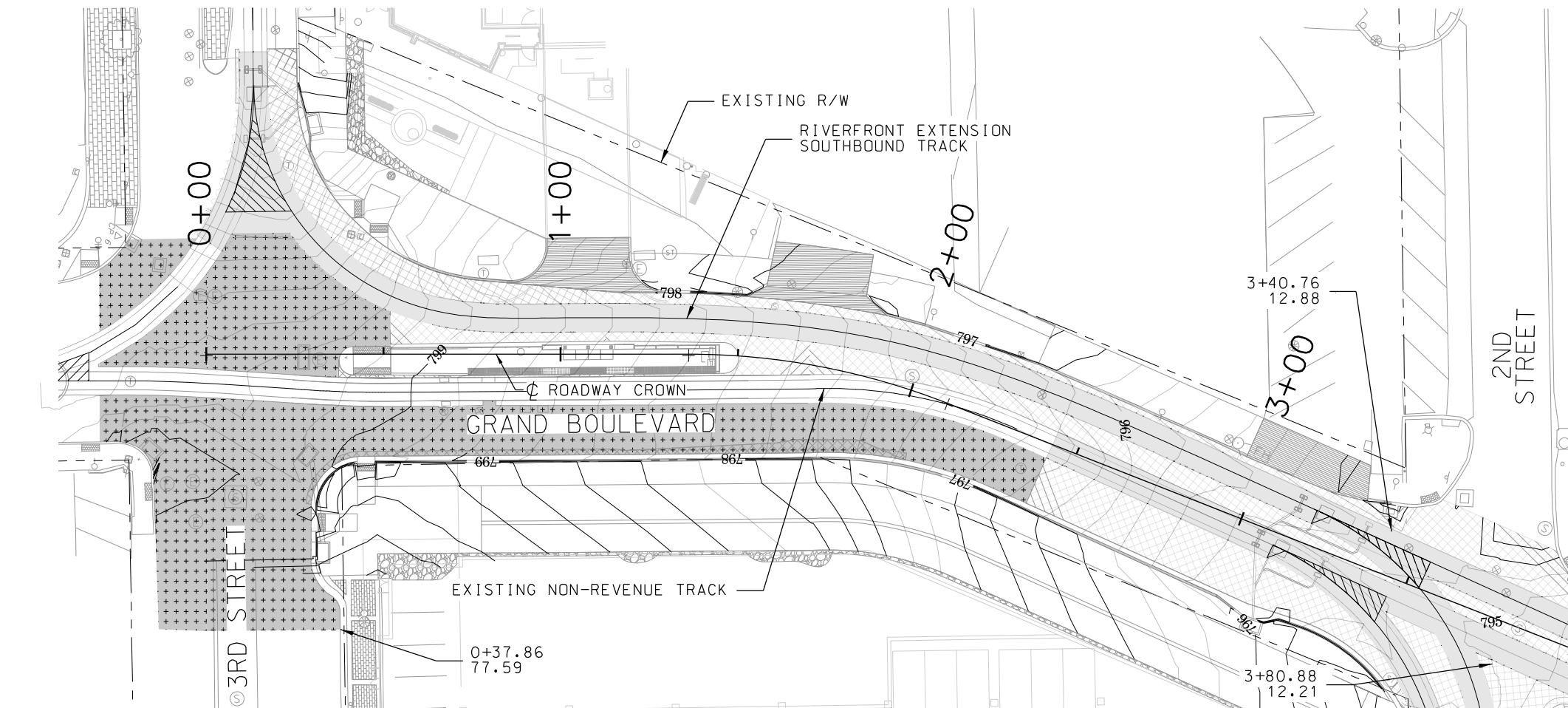
LEGEND

- VARIABLE MILL AND 2" OVERLAY
- MILL AND VARIABLE OVERLAY
- EXISTING TRACK SLAB
- PROPOSED TRACK SLAB
- CONCRETE
- HMAC FULL DEPTH
- DRIVEWAY PAVEMENT
- PROPOSED ROADWAY CROWN

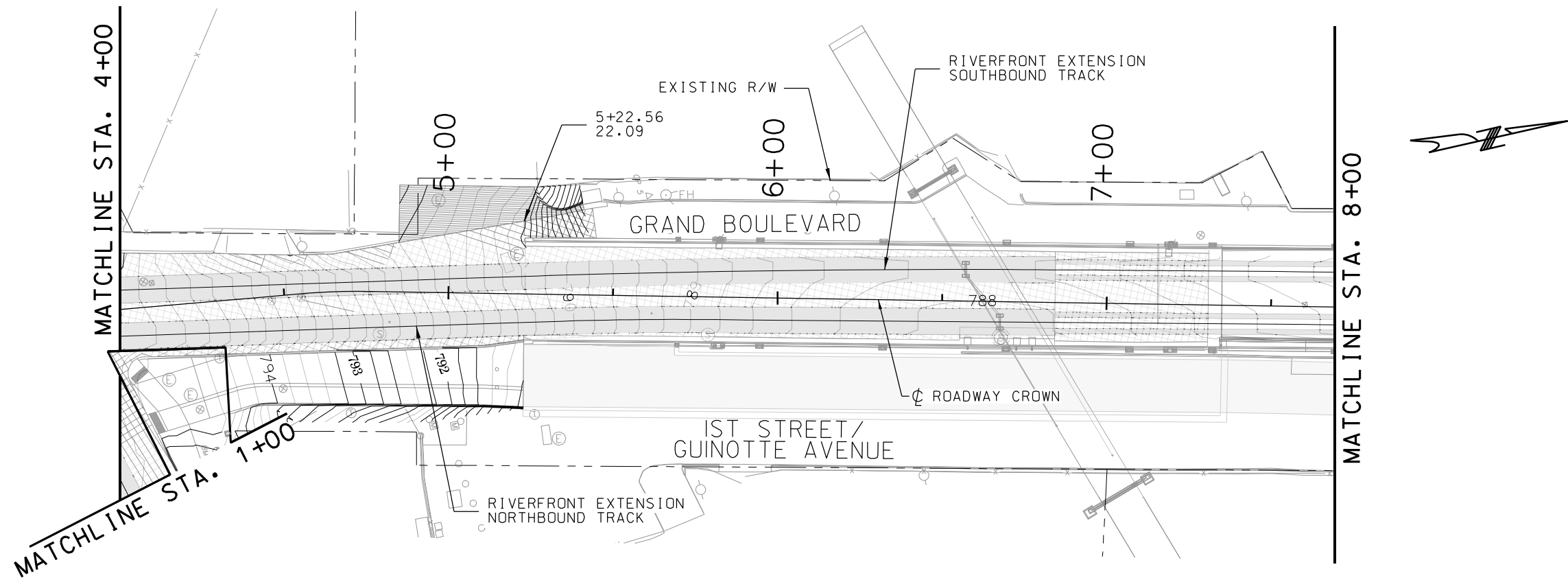
VERTICAL SCALE

HORIZONTAL SCALE

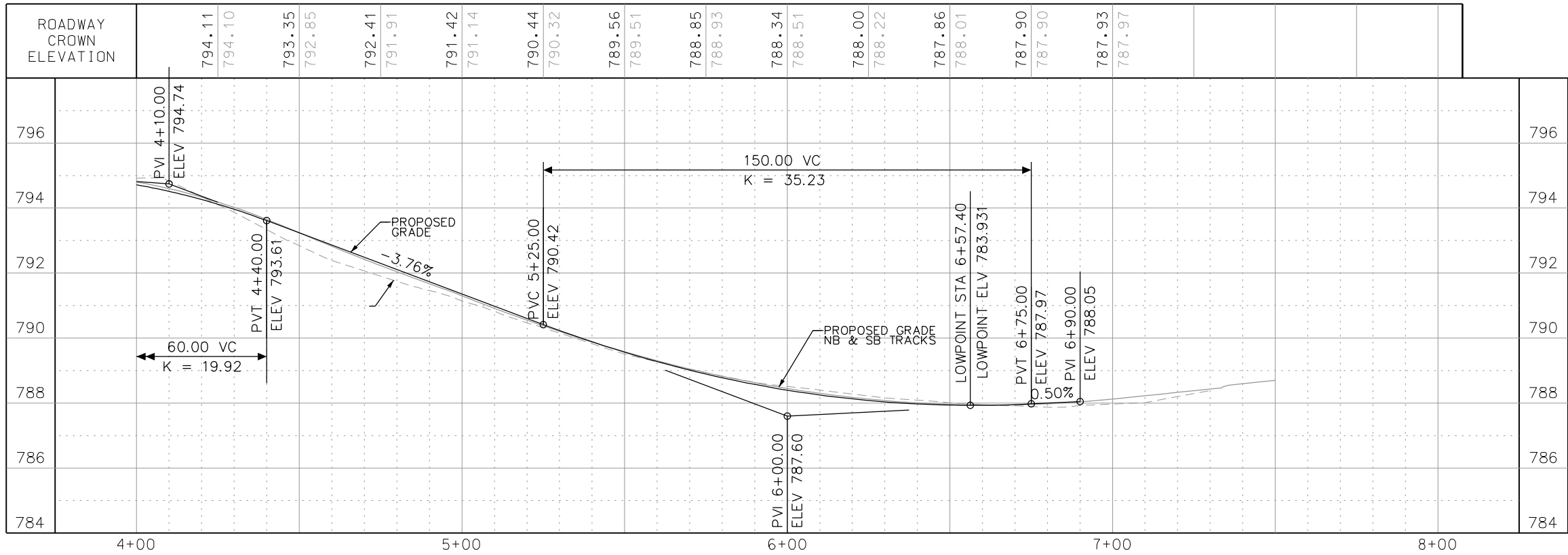
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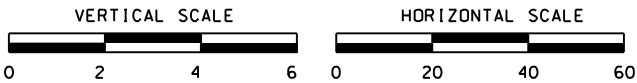
REV	DATE	DESCRIPTION	DESIGNED BY	DR	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34":
			CHECKED BY	KAM	HDR	HDR Engineering, Inc.	10450 Holmes Road	Ht P = 20'
			DRAWN BY	BW			Suite 600	FILENAME:
							Kansas City, MO 64131-3471	RI01.dgn
			CHECKED BY	DR			816-360-2700	CONTRACT NO.:
			APPROVED BY	NKS			816-283-3456	CONTRACT NO. ***
							Certificate of Authority: 000856	VOLUME:
							Certificate of Authority: 000466	DRAWING NO.:
								SHEET NO.:
								R101
								468



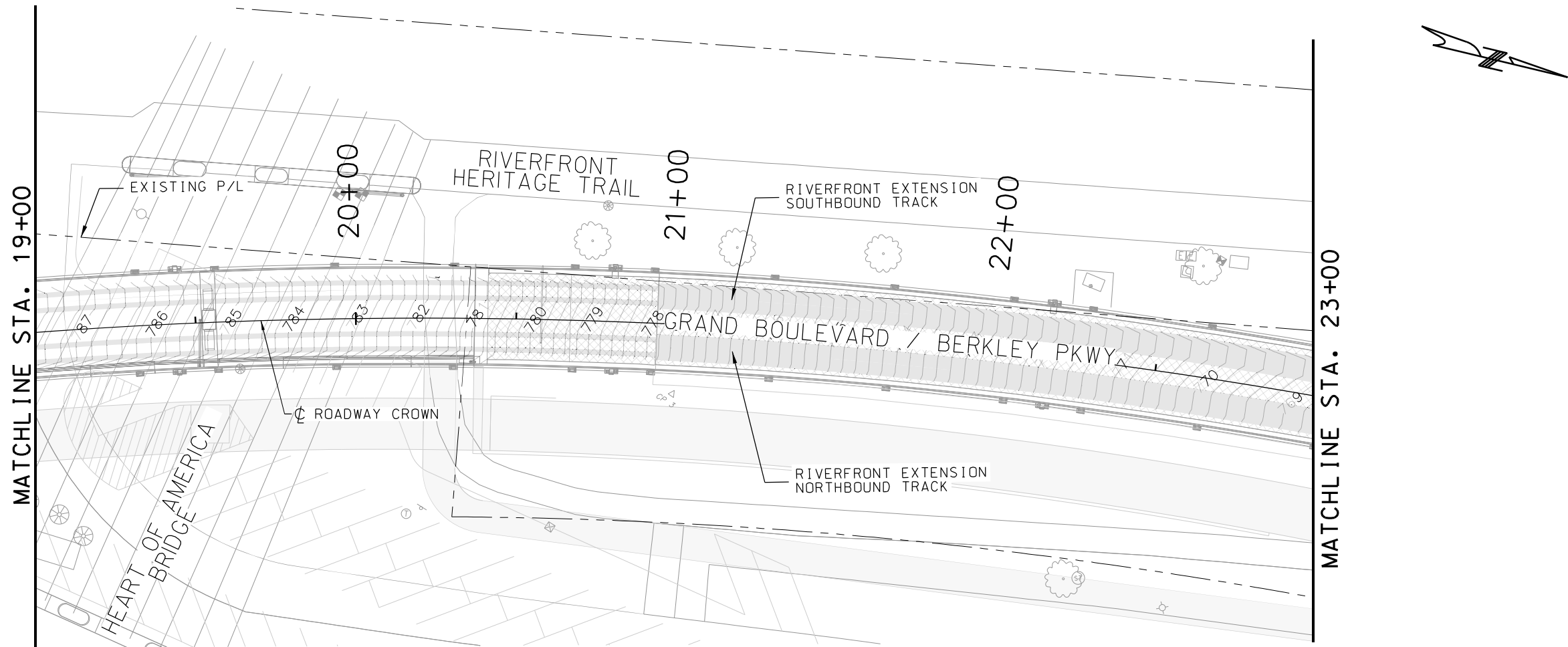
- GENERAL NOTES
1. SEE CROSS SECTIONS FOR OFFSET TO NORTHBOUND TRACK CENTERLINE.
 2. PROPOSED ELEVATION ALONG ROADWAY CROWN REPRESENT THE FINISHED SURFACE ELEVATIONS.
 3. IF SUBSTANDARD PAVEMENT AND/OR SUBGRADE IS FOUND DURING MILLING, CONTRACTOR WILL REPAIR AND RECONSTRUCT THAT SECTION FOR ROADWAY.



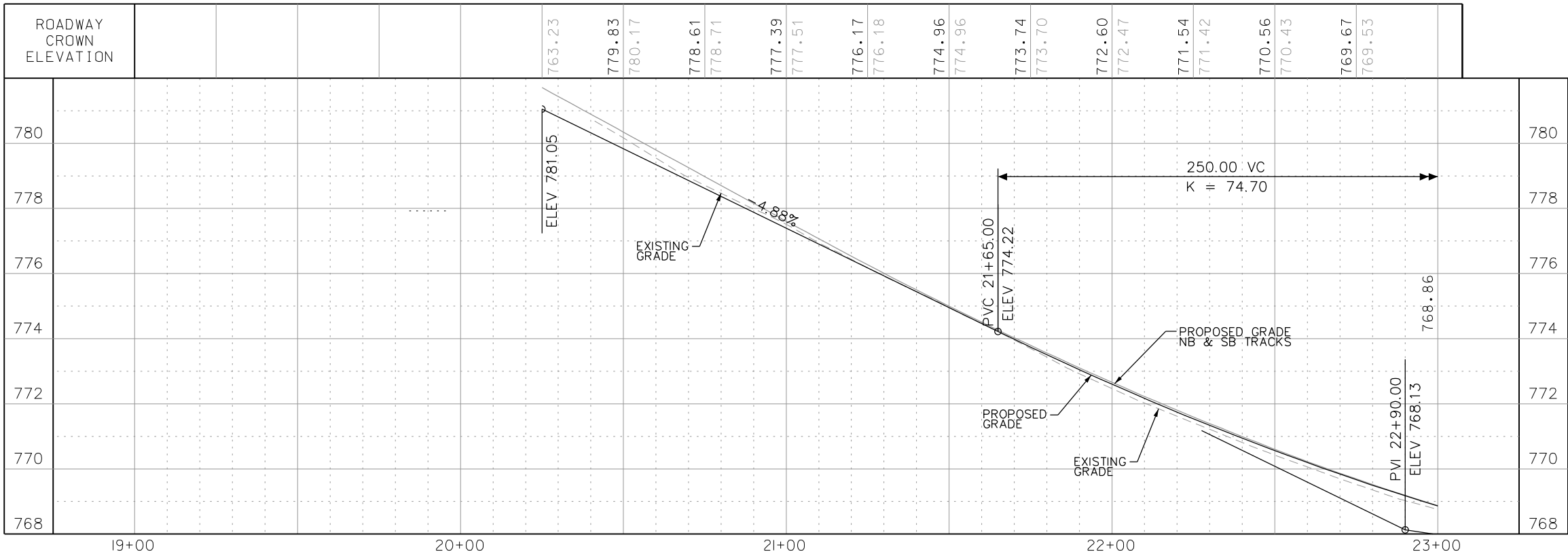
- LEGEND
- VARIABLE MILL AND 2" OVERLAY
 - MILL AND VARIABLE OVERLAY
 - EXISTING TRACK SLAB
 - PROPOSED TRACK SLAB
 - CONCRETE
 - HMAC FULL DEPTH
 - DRIVEWAY PAVEMENT
 - PROPOSED ROADWAY CROWN



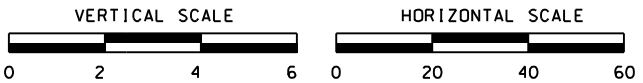
REV	DATE	DESCRIPTION	DESIGNED BY DR			ISSUED FOR BID	DATE: 12-23-2022		Tallafiero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H=1" = 20'	
			CHECKED BY KAM									ROADWAY MILL AND OVERLAY
			DRAWN BY BW									PLAN AND PROFILE
			CHECKED BY DR									STA 4+00 TO STA 8+00
			APPROVED BY NKS									
PLOT DATE: 12/23/2022			9:58:43 AM		DATE: 12-23-2022	NOT FOR CONSTRUCTION				DRAWING NO.: R102	SHEET NO.: 469	



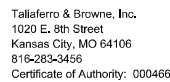
- GENERAL NOTES
1. SEE CROSS SECTIONS FOR OFFSET TO NORTHBOUND TRACK CENTERLINE.
 2. PROPOSED ELEVATION ALONG ROADWAY CROWN REPRESENT THE FINISHED SURFACE ELEVATIONS.
 3. IF SUBSTANDARD PAVEMENT AND/OR SUBGRADE IS FOUND DURING MILLING, CONTRACTOR WILL REPAIR AND RECONSTRUCT THAT SECTION FOR ROADWAY.



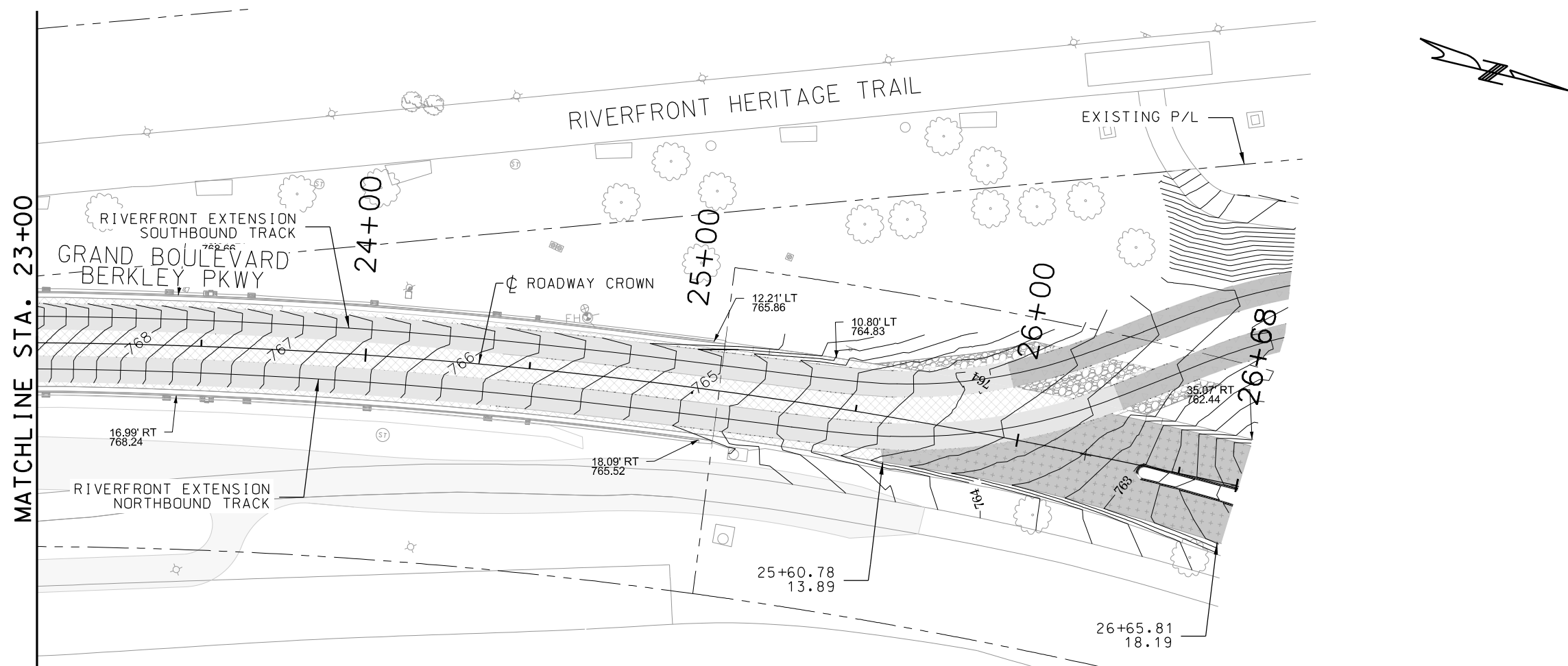
- LEGEND
- VARIABLE MILL AND 2" OVERLAY
 - MILL AND VARIABLE OVERLAY
 - EXISTING TRACK SLAB
 - PROPOSED TRACK SLAB
 - CONCRETE
 - HMAC FULL DEPTH
 - DRIVEWAY PAVEMENT
 - PROPOSED ROADWAY CROWN



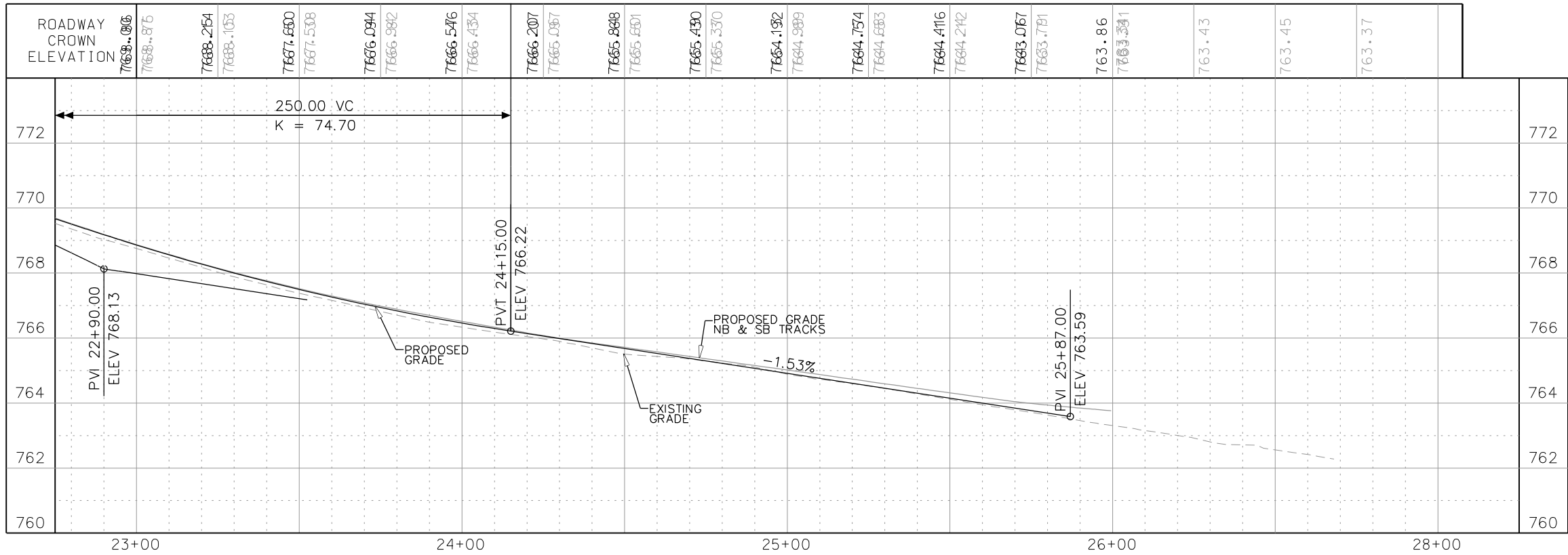
REV	DATE	DESCRIPTION	DESIGNED BY	DR	ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": Ht/P = 20'
			CHECKED BY	KAM	HDR	HDR Engineering, Inc.		FILENAME: R103.dgn
			DRAWN BY	BW	10450 Holmes Road	Tallafiero & Browne, Inc.		CONTRACT NO.: CONTRACT NO. ***
					Suite 600	1020 E. 8th Street		VOLUME: 1
			CHECKED BY	DR	Kansas City, MO 64131-3471	Kansas City, MO 64106		DRAWING NO.: R103
			APPROVED BY	NKS	816-360-2700	816-283-3456		SHEET NO.: 470
					Certificate of Authority: 000856	Certificate of Authority: 000466		
PLOT DATE: 12/23/2022			DATE: 12-23-2022		NOT FOR CONSTRUCTION			



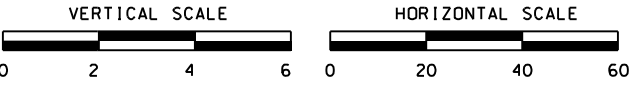
ROADWAY MILL AND OVERLAY
PLAN AND PROFILE
STA 19+00 TO STA 23+00



- GENERAL NOTES
1. SEE CROSS SECTIONS FOR OFFSET TO NORTHBOUND TRACK CENTERLINE.
 2. PROPOSED ELEVATION ALONG ROADWAY CROWN REPRESENT THE FINISHED SURFACE ELEVATIONS.
 3. IF SUBSTANDARD PAVEMENT AND/OR SUBGRADE IS FOUND DURING MILLING, CONTRACTOR WILL REPAIR AND RECONSTRUCT THAT SECTION FOR ROADWAY.

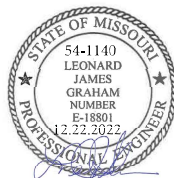


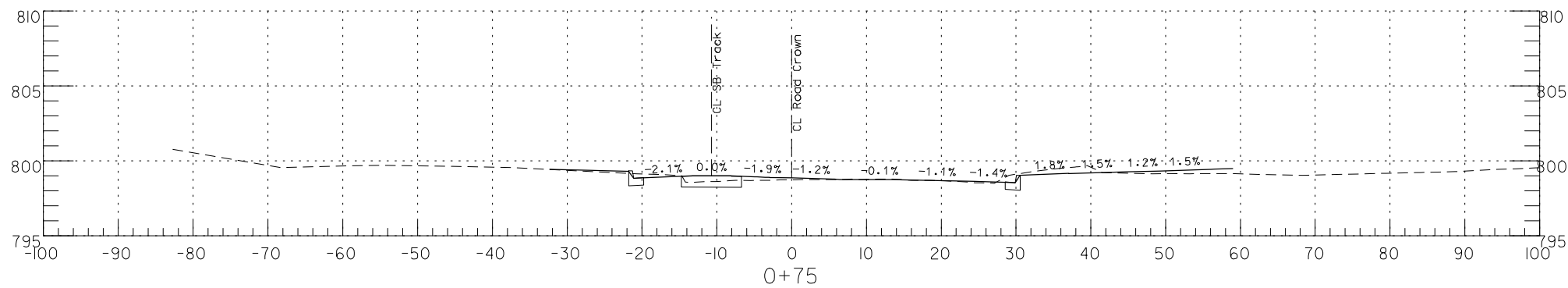
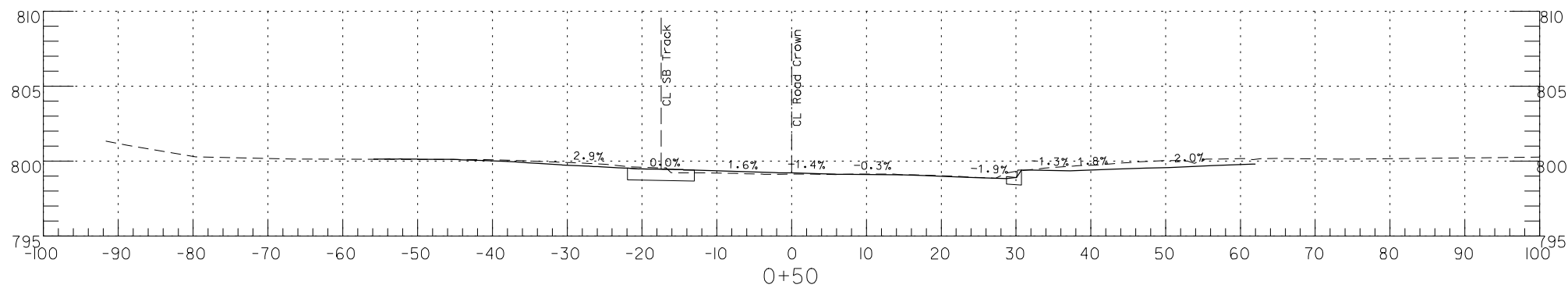
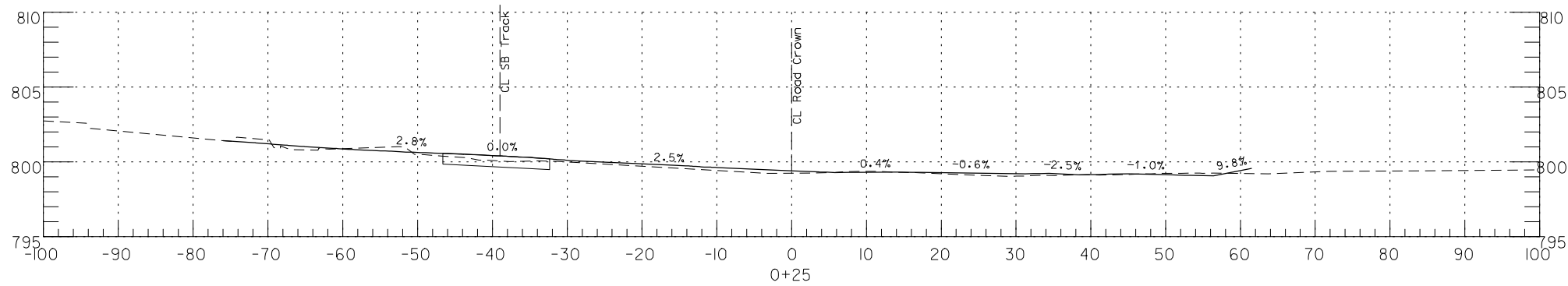
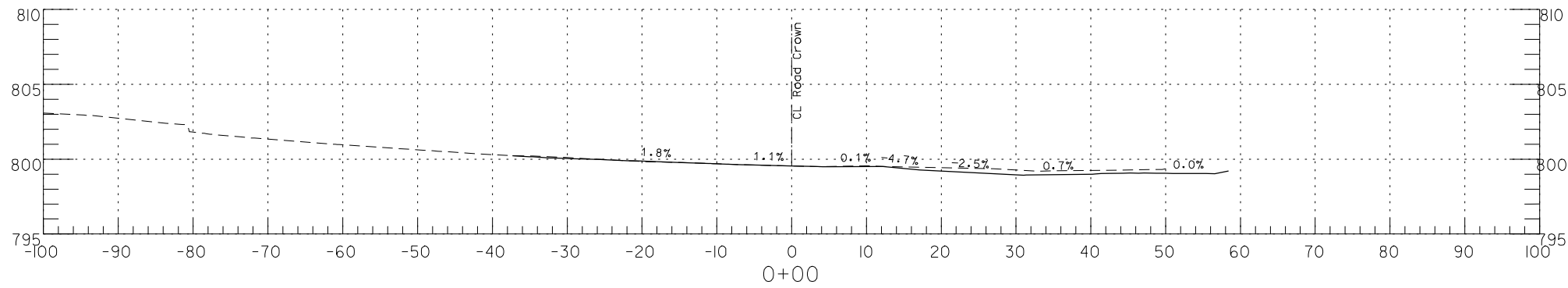
- LEGEND
- VARIABLE MILL AND 2" OVERLAY
 - MILL AND VARIABLE OVERLAY
 - EXISTING TRACK SLAB
 - PROPOSED TRACK SLAB
 - CONCRETE
 - HMAC FULL DEPTH
 - DRIVEWAY PAVEMENT
 - PROPOSED ROADWAY CROWN



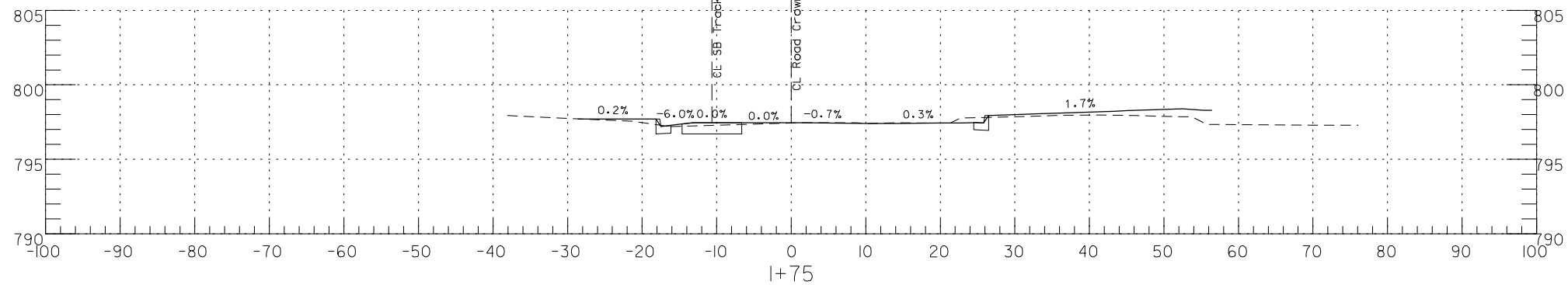
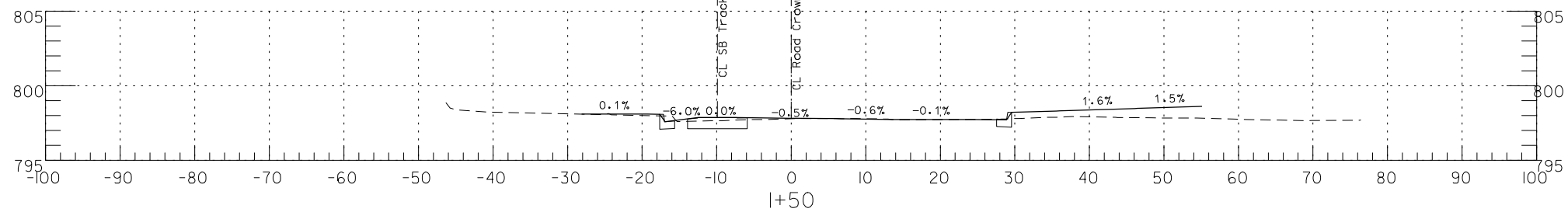
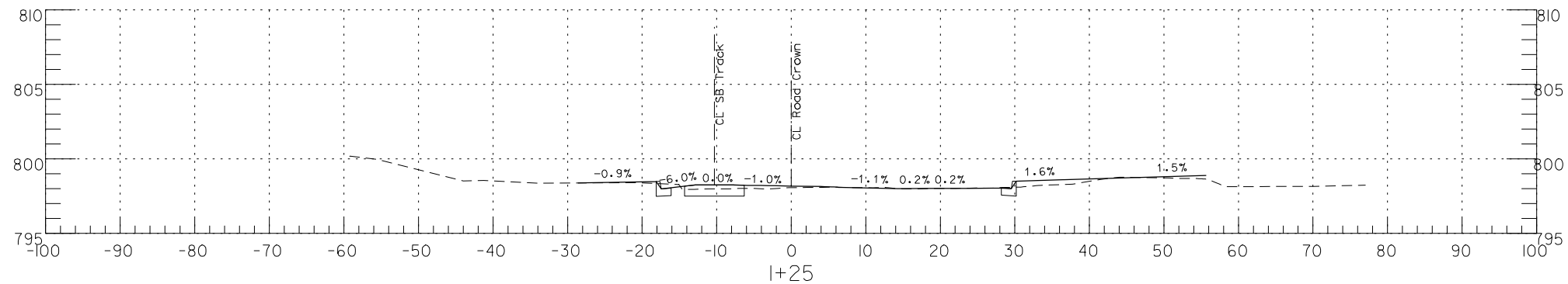
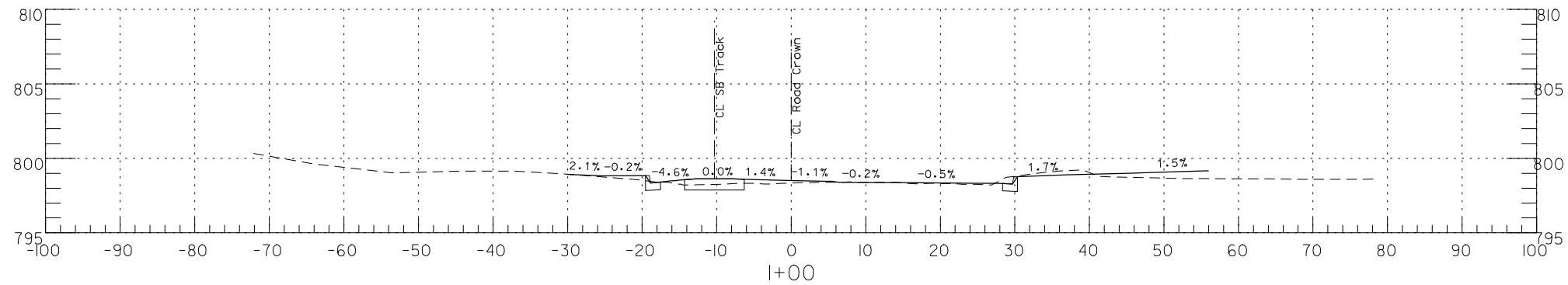
REV	DATE	DESCRIPTION	DESIGNED BY DR			ISSUED FOR BID	DATE: 12-23-2022		HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		Tallaferrero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": Ht/P = 20'
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			DRAWN BY BW			CONTRACT NO.: CONTRACT NO. ***							
			CHECKED BY DR			VOLUME: 1							
			APPROVED BY NKS			DRAWING NO.: R104							
PLOT DATE: 12/23/2022			9:58:49 AM		DATE: 12-23-2022			NOT FOR CONSTRUCTION		ROADWAY MILL AND OVERLAY PLAN AND PROFILE STA 23+00 TO STA 28+00		SHEET NO.: 471	

Desc		Distance	Station	Northing	Easting	Dc(Arc)	Radius	Delta	L	T
POB			0+00.00	1071847.37	2765731.48					
Tangent	N 13°31'45.63" W	136.09'								
PC			1+36.09	1071979.69	2765699.64					
PI			1+73.51	1072016.50	2765690.78	28°38'52"	200.00'	21°26'13.30"	74.83'	37.86'
CC				1072026.48	2765894.09					
PT			2+10.92	1072054.00	2765695.99					
Tangent	N 07°54'27.67"E	244.48'								
PC			4+55.40	1072296.15	2765729.63					
PI			4+65.58	1072306.24	2765731.03	28°38'52"	200.00'	5°49'53.18"	20.36'	10.19'
CC				1072268.63	2765927.73					
PT			4+75.75	1072316.13	2765733.45					
Tangent	N 13°44'20.85" E	334.60'								
PC			8+10.36	1072641.16	2765812.92					
PI			17+15.77	1073626.88	2766053.92	03°33'33"	1609.76'	64°27'09.07"	1810.84'	1014.75'
CC				1072258.84	2767376.62					
PT			26+21.19	1073834.53	2767047.20					
Tangent	N 78°11'29.93" E	46.88'								
POE			26+68.08	1073844.13	2767093.09					

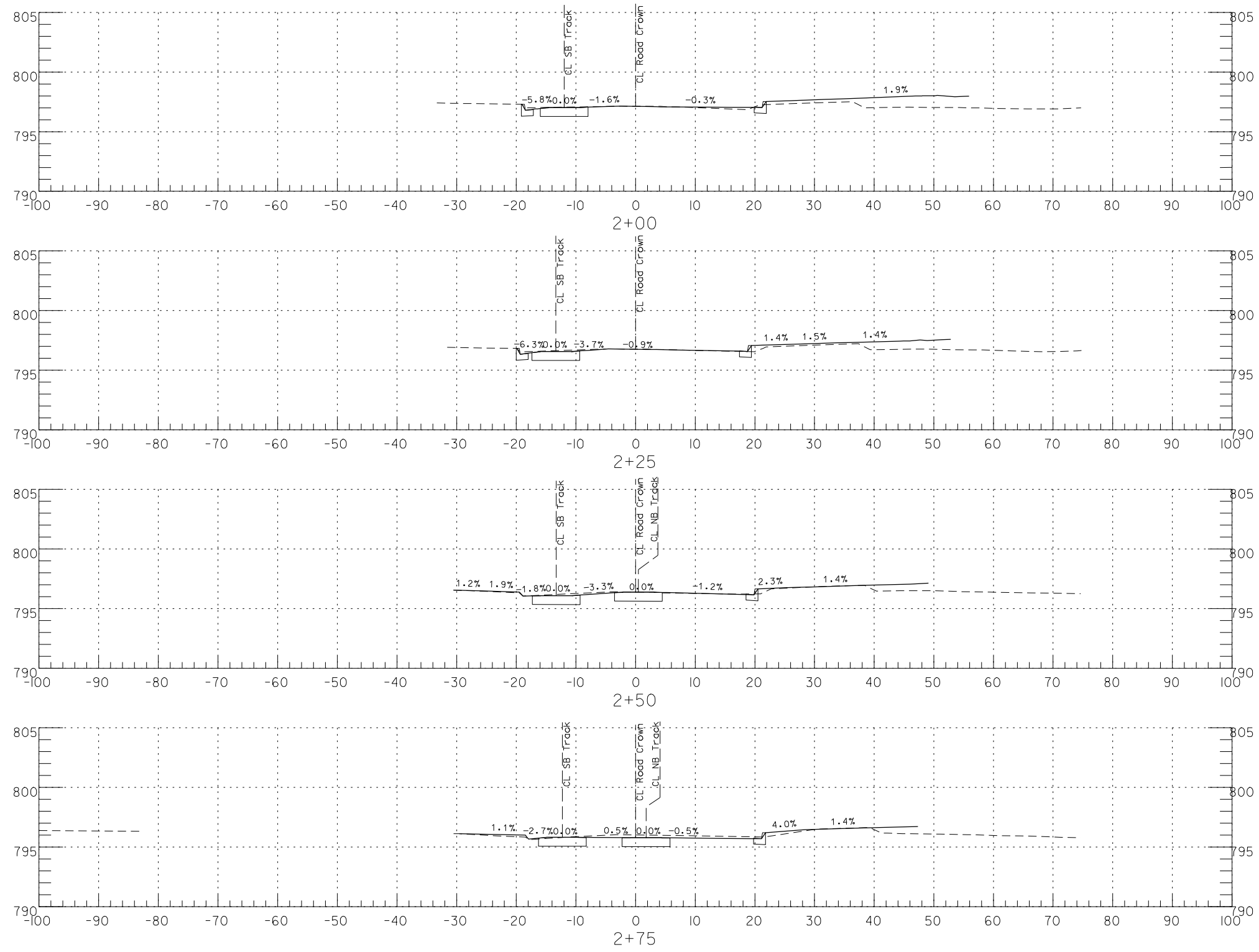
REV	DATE	DESCRIPTION	DESIGNED BY DR			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": NO SCALE			
			CHECKED BY KAM				10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856				10220 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466		FILENAME: R201.dgn	
			DRAWN BY BW										CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY DR										VOLUME: I	
			APPROVED BY NKS										DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022 9:59:47 AM			DATE 12-23-2022			NOT FOR CONSTRUCTION				R201 473				

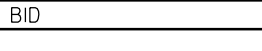


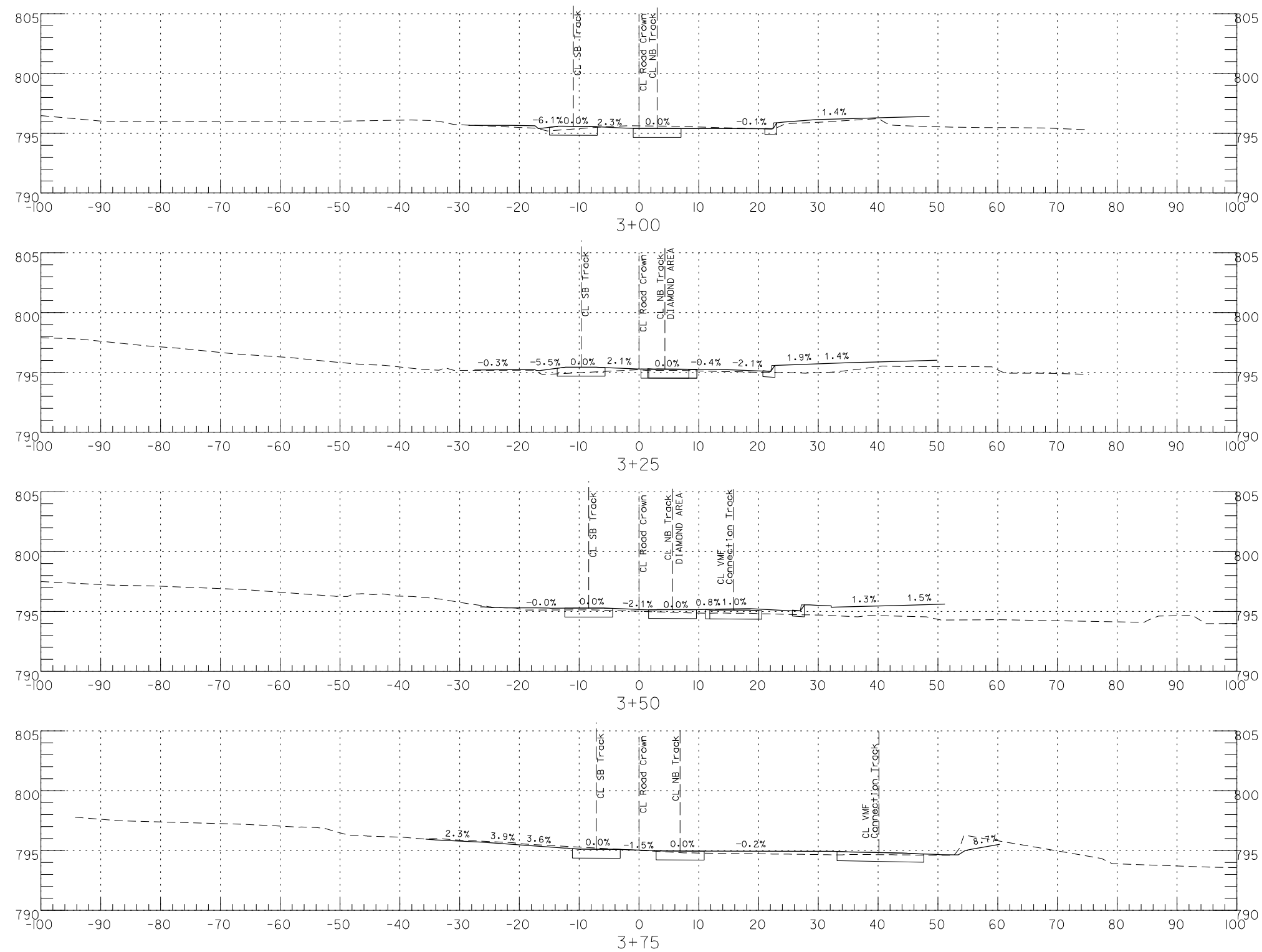
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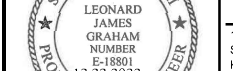
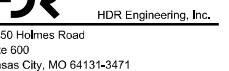


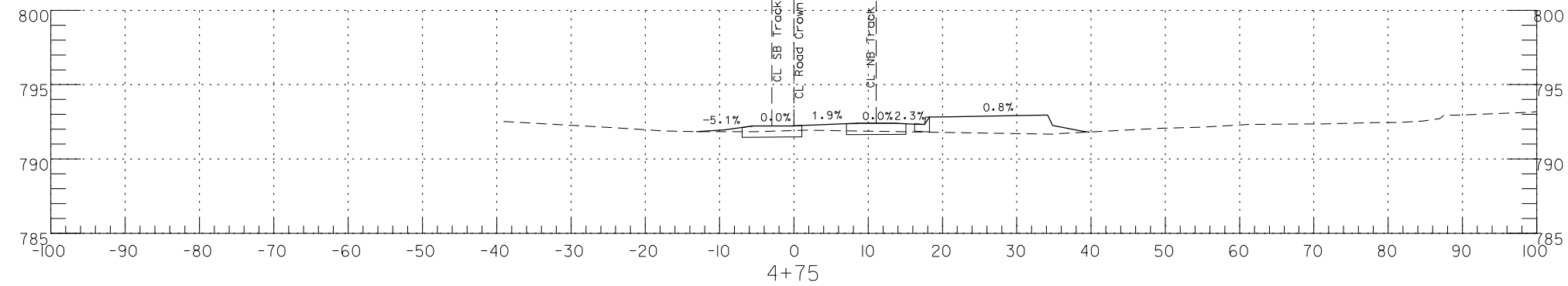
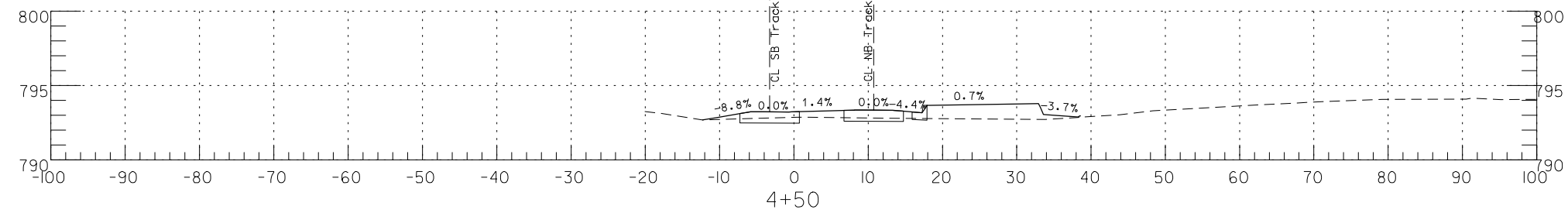
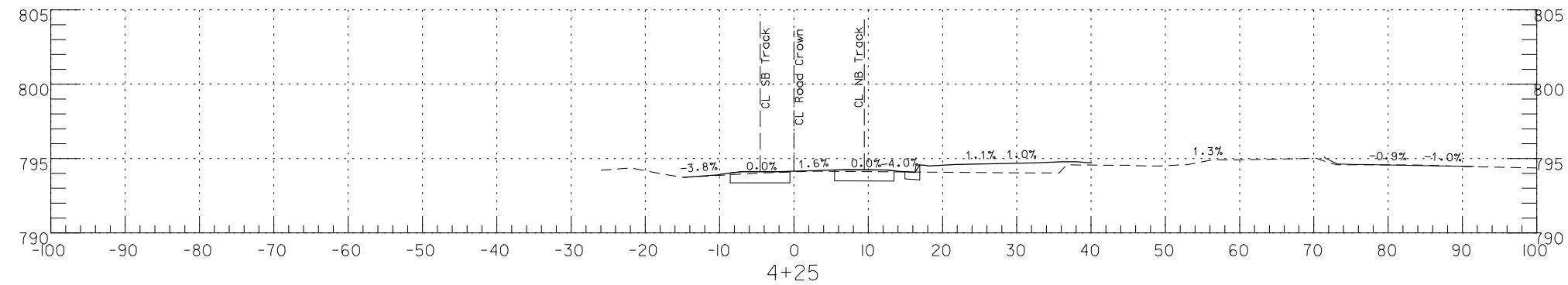
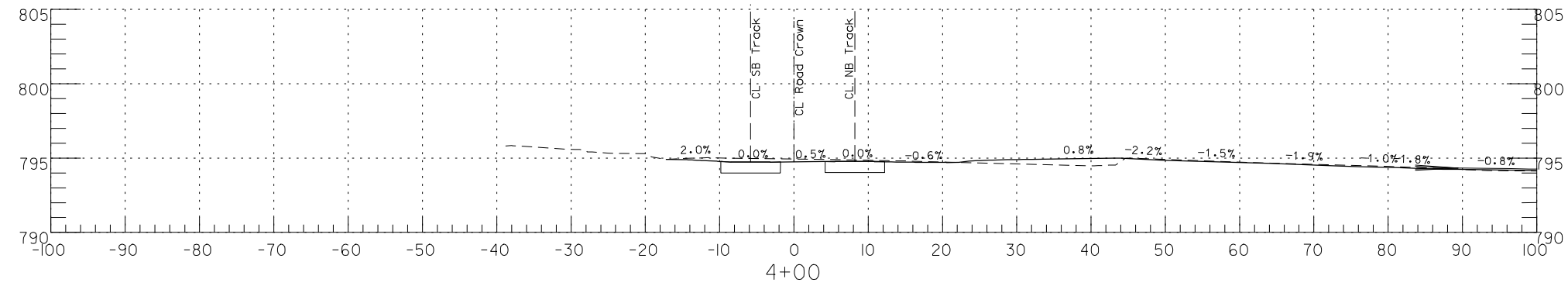
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			CHECKED BY	KAM			 HDR Engineering, Inc.		 Tallalero & Browne, Inc.			FILENAME: XS01.dgn	
			DRAWN BY	BW			10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466			CONTRACT NO.: CONTRACT NO. ***	
			CHECKED BY	DR								VOLUME: I	
			APPROVED BY	NKS								DRAWING NO.: SHEET NO.:	
PLOT DATE: 12/23/2022 9:59:50 AM			DATE	12-23-2022			NOT FOR CONSTRUCTION				XS02 475		

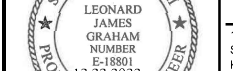


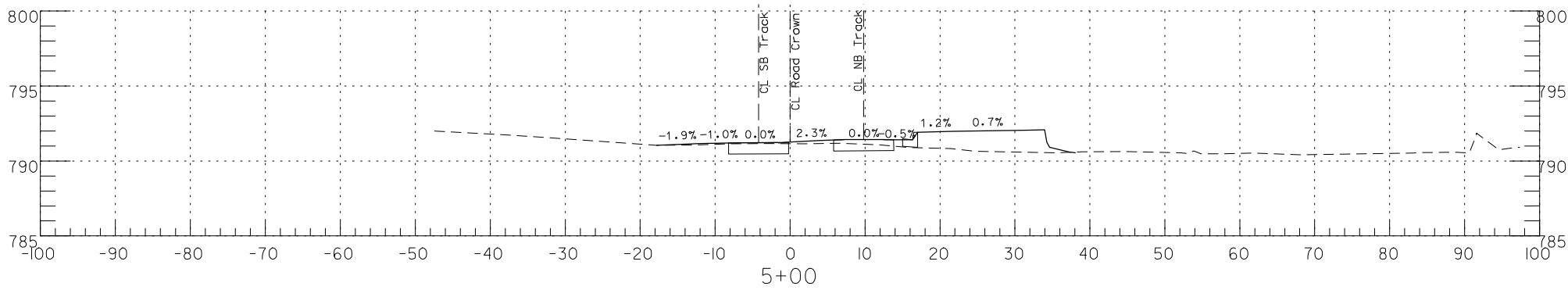
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			CHECKED BY	KAM			 HDR Engineering, Inc.						FILENAME: XS01.dgn	
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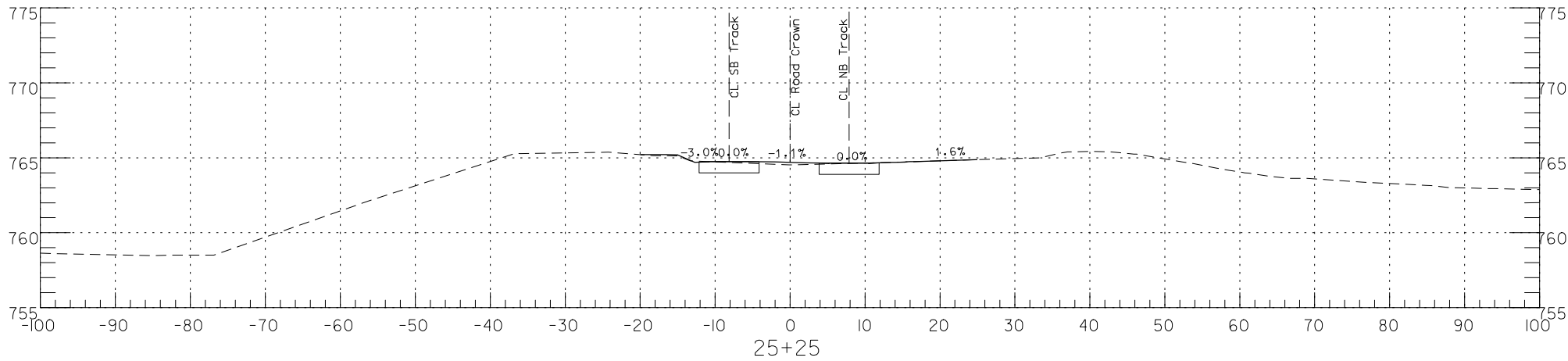
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			DRAWN BY	BW									
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PLOT DATE: 12/23/2022 9:59:51 AM			DATE	12-23-2022	NOT FOR CONSTRUCTION								

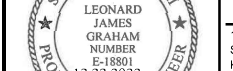
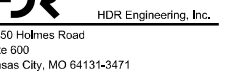


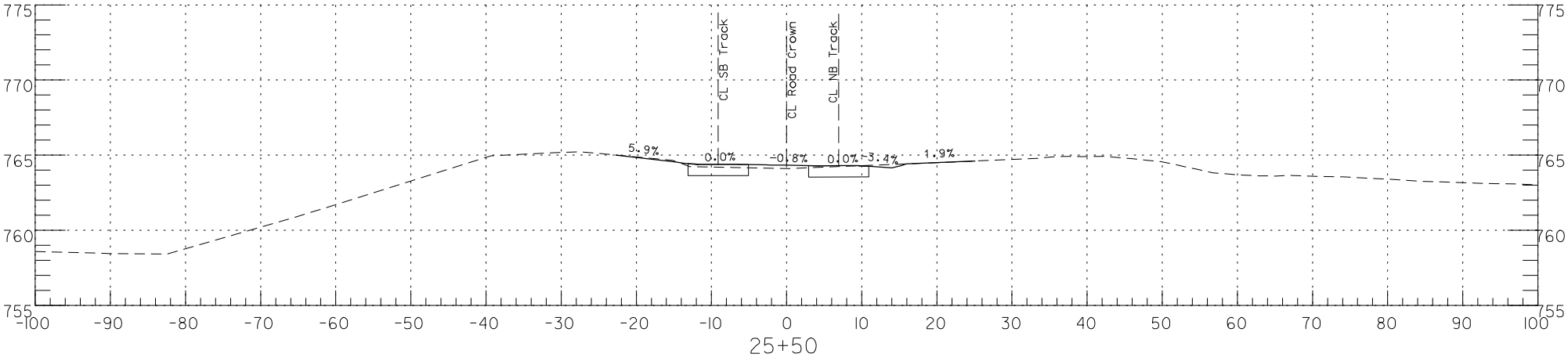
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			CHECKED BY	KAM			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 Tallalero & Browne, Inc. 1020 E. 8th Street Kansas City, MO 64106 816-283-3456 Certificate of Authority: 000466	ROADWAY MILL AND OVERLAY CROSS SECTIONS GRAND BOULEVARD			FILENAME: XS01.dgn	
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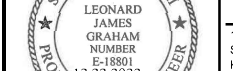


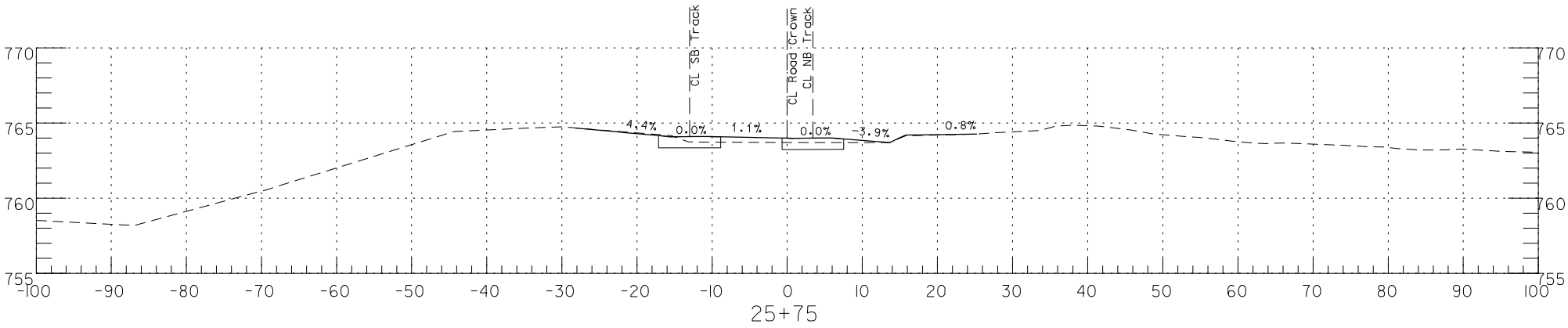
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			CHECKED BY	KAM						ROADWAY MILL AND OVERLAY		ROADWAY MILL AND OVERLAY		
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			CHECKED BY	DR						GRAND BOULEVARD		GRAND BOULEVARD		
			APPROVED BY	NKS						DRAWING NO.: XS06		SHEET NO.: 479		
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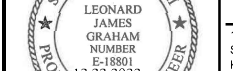
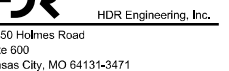


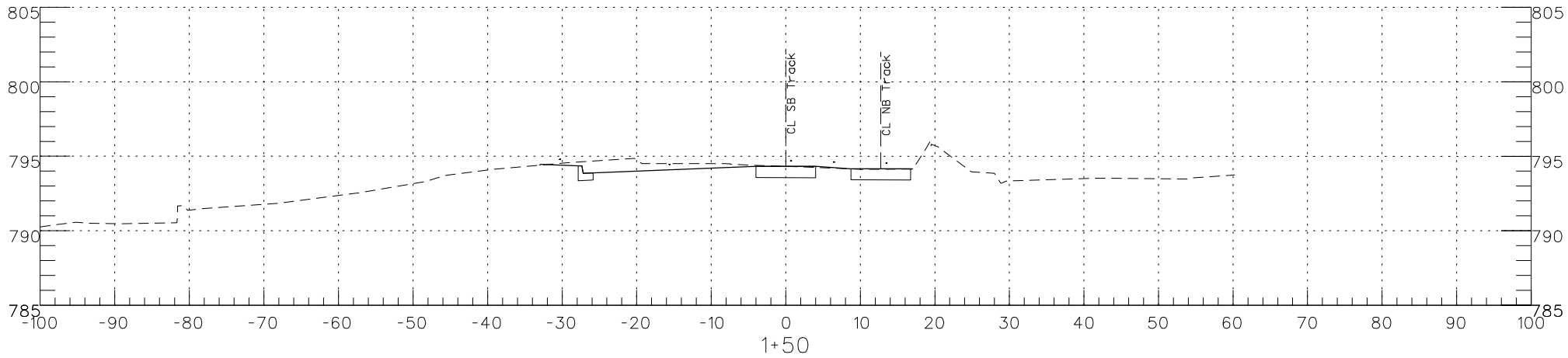
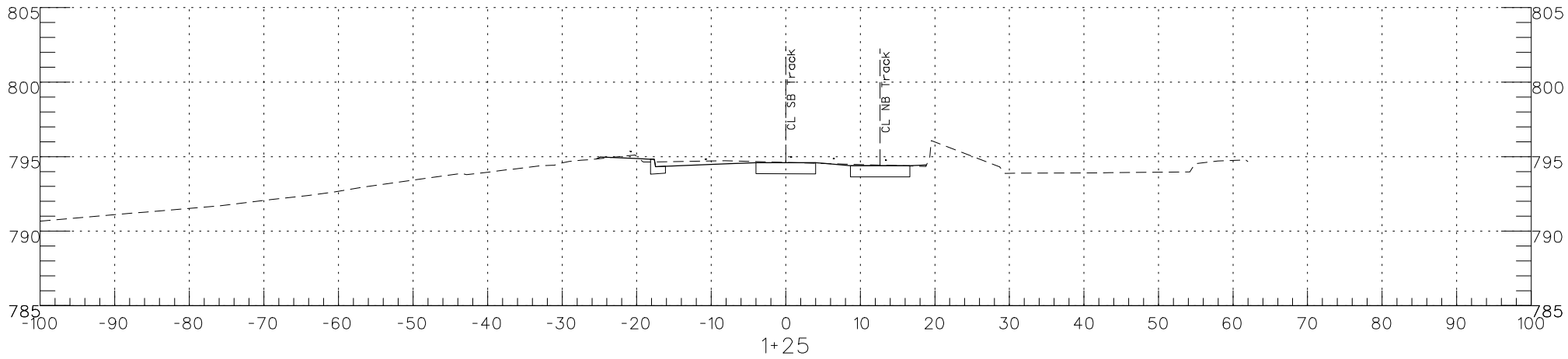
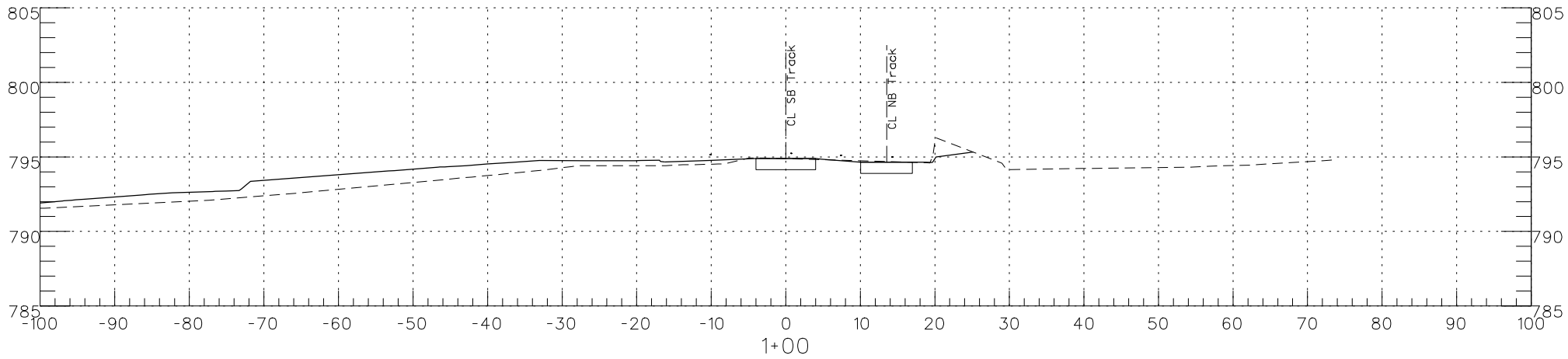
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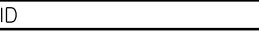


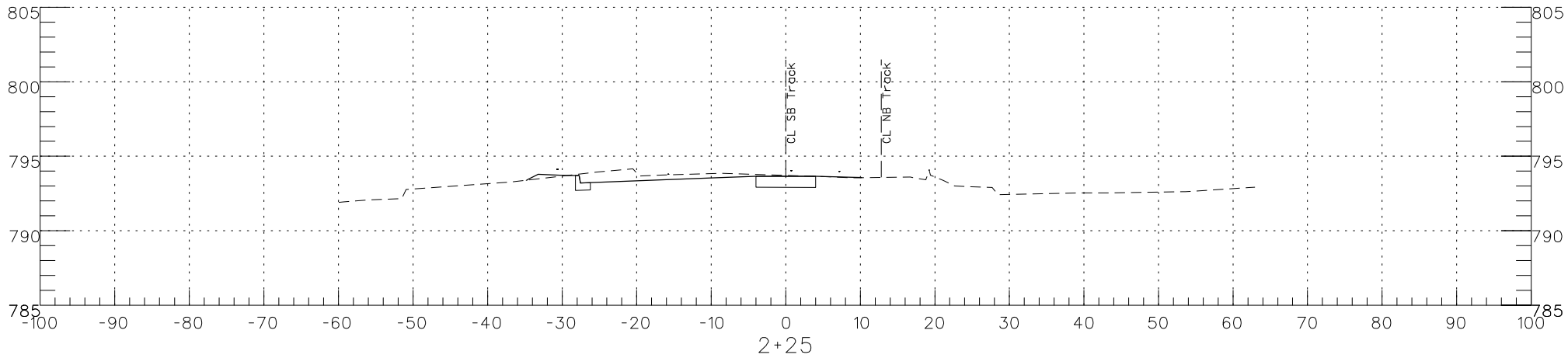
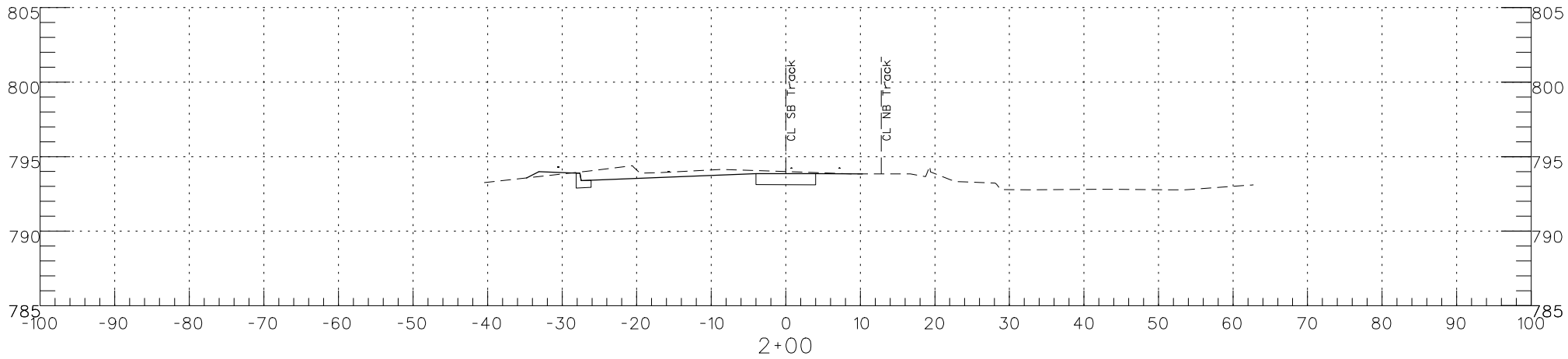
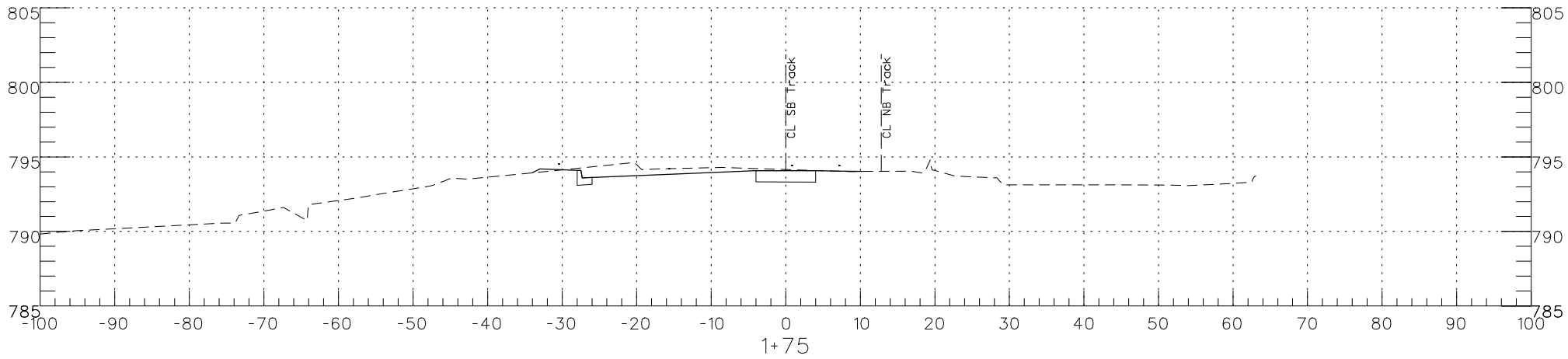
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			APPROVED BY	NKS							NOT FOR CONSTRUCTION				SHEET NO.:	
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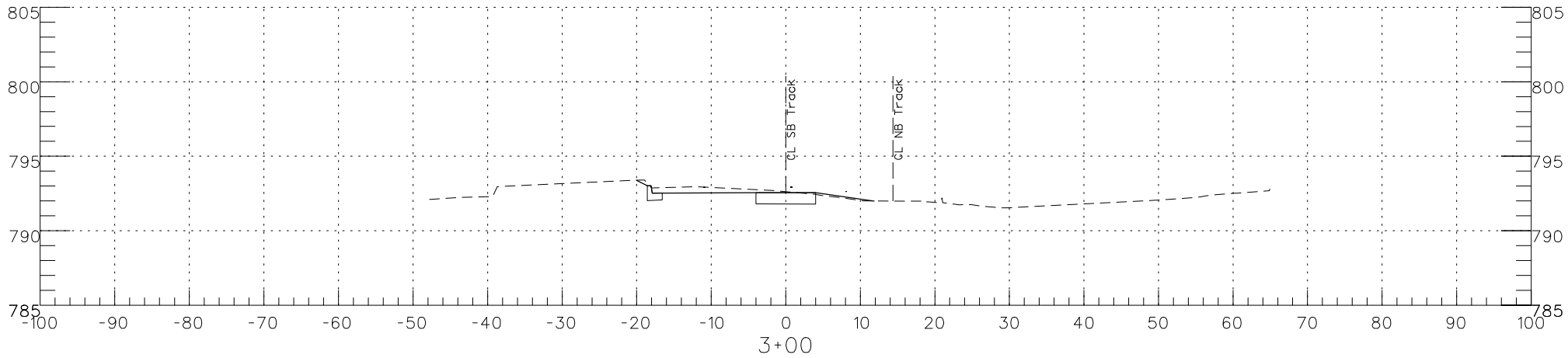
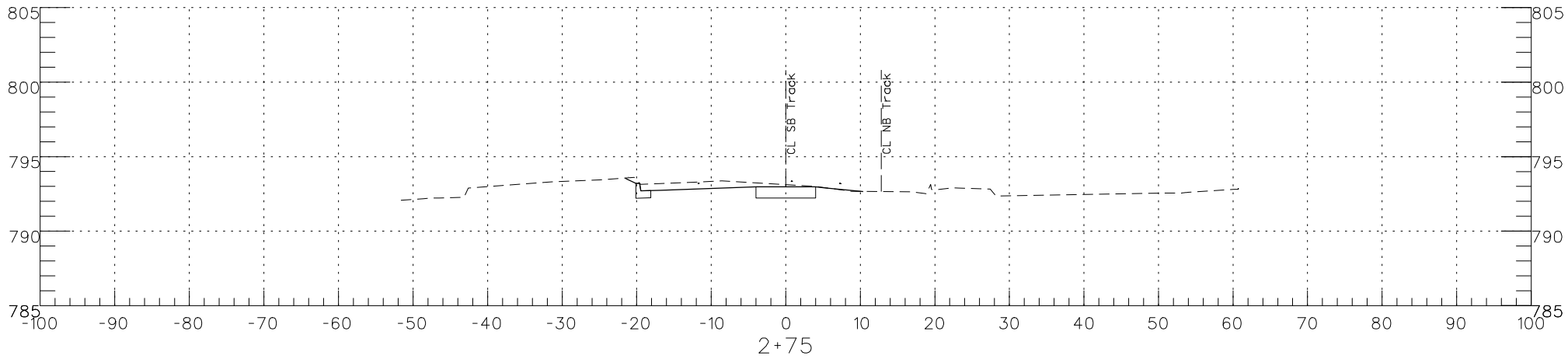
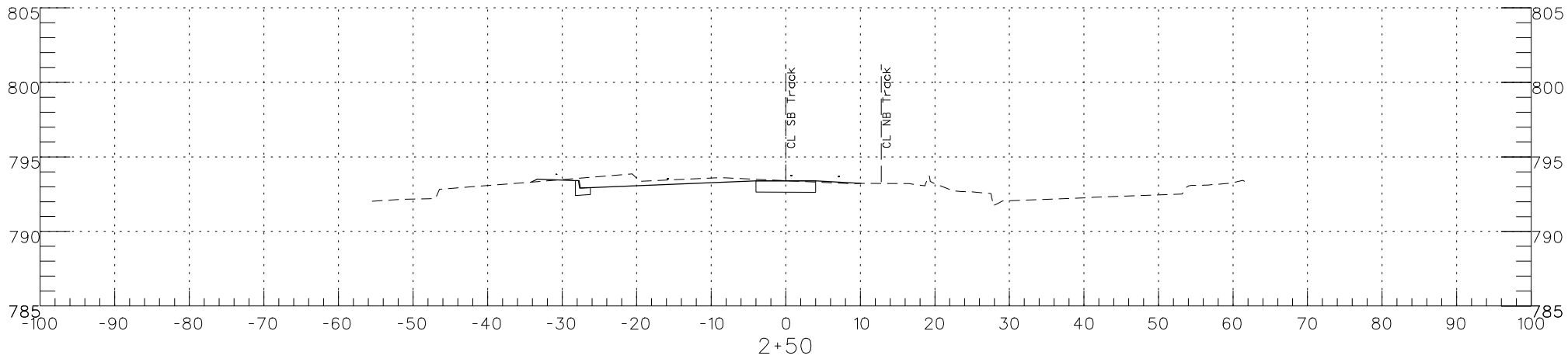
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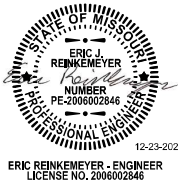


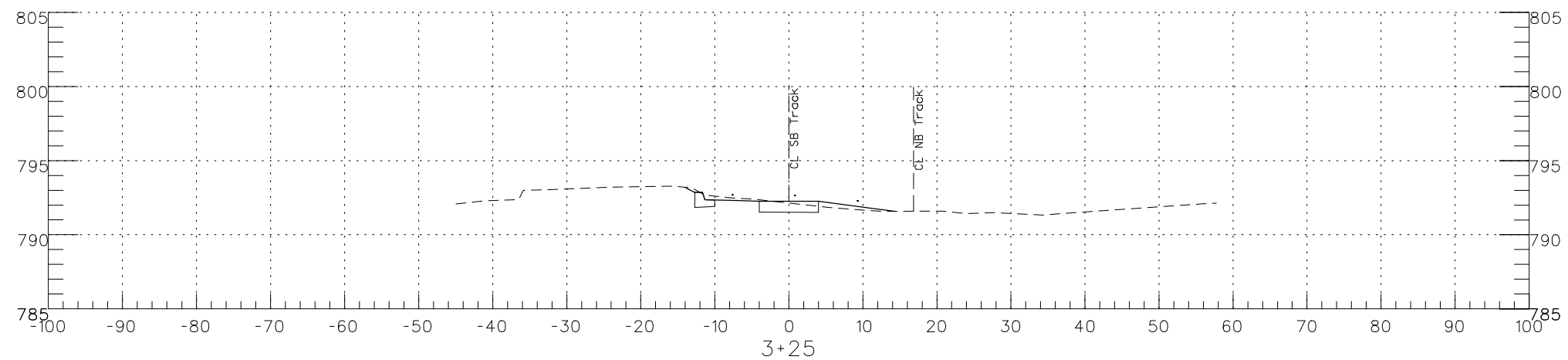
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			CHECKED BY	NWH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856	 HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873		FILENAME:
			DRAWN BY	EJR						Mill and Overlay CROSS SECTIONS
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PLOT DATE: 12/23/2022										
			DATE	12-23-2022						



REV	DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID		DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION		SCALE FOR 22"x34": H: 1" = 10' V: 1" = 5'		
			CHECKED BY	NWH			 HDR Engineering, Inc. 10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-2700 Certificate of Authority: 000856		 HG CONSULT Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-912-4720 Certificate of Authority: 2010005873					
			DRAWN BY	EJR								ROADWAY MILL AND OVERLAY		
			CHECKED BY	NWH								CROSS SECTIONS		
			APPROVED BY	NKS								2ND STREET		
PLOT DATE: 12/23/2022			DATE: 12-23-2022		NOT FOR CONSTRUCTION							DRAWING NO.: XS11	SHEET NO.: 484	



REV	DATE	DESCRIPTION	DESIGNED BY EJR			ISSUED FOR BID		DATE: 12-23-2022		KANSAS CITY STREETCAR - RIVERFRONT EXTENSION	SCALE FOR 22"x34": H: 1" = 10' V: 1" = 5'			
			CHECKED BY NWH			 HDR Engineering, Inc.	 HG Consult Inc	ROADWAY MILL AND OVERLAY CROSS SECTIONS 2ND STREET				FILENAME:		
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PLOT DATE: 12/23/2022			DATE 12-23-2022											



REV	DATE	DESCRIPTION	DESIGNED BY	EJR			ISSUED FOR BID	DATE: 12-23-2022	KANSAS CITY STREETCAR - RIVERFRONT EXTENSION ROADWAY MILL AND OVERLAY CROSS SECTIONS 2ND STREET	SCALE FOR 22"x34": H: 1" = 10' V: " = 5'		
			CHECKED BY	NWH								FILENAME:
			DRAWN BY	EJR						10450 Holmes Road Suite 600 Kansas City, MO 64131-3471 816-360-4700 Certificate of Authority: 000856	HG Consult Inc 7733 N. Wallace Ave. Kansas City, MO 64158 816-4812-4720 Certificate of Authority: 2010005873	Mill and Overlay CROSS SECTIONS
			CHECKED BY	NWH								CONTRACT NO.:
			APPROVED BY	NKS								CONTRACT NO. ***
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PLOT DATE: 12/23/2022		1:27:23 PM	DATE	12-23-2022			NOT FOR CONSTRUCTION		DRAWING NO.:	SHEET NO.:		
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